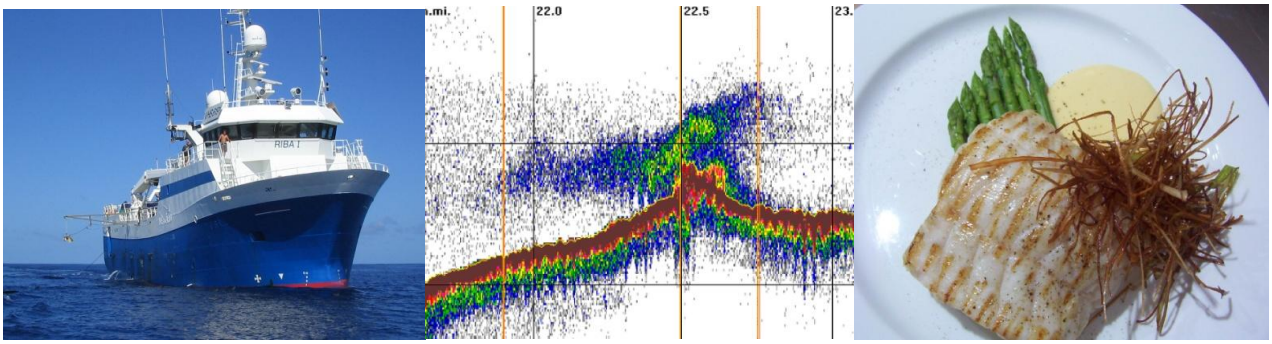
Final Report - FRDC Project 2008-334

A scoping study to investigate the feasibility of a national seafood industry exchange program

(human capital mobility)



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Australian Government

Fisheries Research and Development Corporation

COBALT

MARINE RESOURCE MANAGEMENT

FRDC TRF Project 2008-334

A scoping study to investigate the feasibility of a national seafood industry exchange program (human capital mobility)

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OBJECTIVES:

1. Demonstrate knowledge transfer via a pilot seafood industry exchange program
2. Lay foundation for the development of a national seafood industry exchange program
3. Identify seafood industry labour force mobility barriers, and identify possible solutions

Project Outcomes

Outcomes from this project include a comprehensive review of the theoretical and practical considerations surrounding the introduction of workforce exchange programs in the Australian seafood industry (wild catch and aquaculture). Greater workforce mobility for the industry has the potential to move valuable human resources to areas of high need, whether seasonal or ongoing; and to build workforce capacity through targeted training, on the job learning, and transfer of valuable skills, experience, and knowledge.

This can make a very positive contribution to the long term sustainability and profitability of Australia's seafood industry, by building its adaptive capacity and resilience in a challenging and changing business environment.

NON TECHNICAL SUMMARY:

This FRDC Tactical Research Fund scoping study to investigate the feasibility of a national seafood industry exchange program was initiated in the face of significant labour force constraints and related challenges for the wild catch and aquaculture sectors. Project objectives were to enable a small number of crew/worker exchanges in the wild catch and aquaculture sectors, develop a national seasonal map of fishing and aquaculture labour demand, and explore the foundations for a national level seafood industry people exchange program.

The initial proposal flagged several dimensions to learning and related productivity improvements for the seafood industry. Work-based (or kinesthetic) learning was recognised to be well aligned with the learning profile of the industry, and the nature of its work. Higher level learning and skills related priorities for the seafood industry were identified as:

- Attraction of workers
- Adoption of higher level skills across the workforce
- Adoption and diffusion of new research, practiceand technology across the industry, and
- Workforce retention and effective skills utilisation

Initially the project was focussed on identifying suitable fisheries and aquaculture operations that could take part in actual workplace exchanges. As the project progressed it became apparent that these would be very difficult to arrange within the limited time and resources for the project. Early in 2010 the project approach was re-oriented to deliver a more theoretical appreciation of mobility programs against the stated objectives.

A national seasonal map describing peak employment periods and supporting information for all of the larger wild catch and aquaculture sectors was the first major output for the project. It was then used to guide the selection of exchange candidate fisheries and then industry representatives within those fisheries/aquaculture sectors.

Although the project did not result in any actual workplace exchanges taking place, the experience of trying to arrange them suggests several important *real life* mobility barriers were present. These informed project findings, and reiterate the fundamental importance of understanding practical industry perspectives, and with them the more influential drivers that could enable success for a future national program.

In part the absence of exchanges is attributed to industry's reluctance to get directly involved in exchanges, despite widespread fishing and aquaculture industry support for the exchange concept. It also reflects the risks for businesses in committing scarce and valuable staff resources to a fledgling project with some operational risk, and somewhat intangible outcomes. Direct competition between businesses for valuable labour is also an issue. Most sectors of the wild catch and aquaculture industry are (not unreasonably) pre-occupied with day to day business and its risks and challenges. Whilst understandable, this approach undervalues the truth that today's strategic planning will mitigate tomorrow's crises.

The project briefly explored seafood industry demographics, recognizing that the demographic outlook is very challenging. The industry has one of the highest median age workforces in Australia, and low numbers of younger workers entering the workforce.

Existing mobility programs in the seafood industry were explored and results suggest very few active examples despite an obvious need. The more formal programs identified were more focused on exchanges between industry and universities, or between universities themselves. This recognition of

the importance of such initiatives, in a sector that is entirely focused on learning, education, and the adaptation and adoption of knowledge and skills, is noteworthy.

Several aquaculture enterprises are currently running private business to business exchange programs focused on the development of directly relevant work skills. Industry stakeholders like these were strongly supportive, and had personally observed substantial value from smaller scale business to business, or one off mobility initiatives.

The project developed a strong conceptual framework describing the attributes of a successful seafood industry mobility program; and the key industry and broader stakeholder capabilities needed to sustain one. Whilst Australian mobility research is scarce, the Australian industry consensus was that these programs could provide both short and long term benefits for productivity, particularly through improved knowledge management.

Evidence obtained during the project identified a range of specific benefits from exchange programs. At an enterprise level these were improved staff knowledge, skills and retention; improved definition around career and skills pathways; better technical awareness, improved use of technology, and generation and diffusion of ideas and new working approaches. At an individual level they were focussed on improved professional and social networks; development of specific and valuable skills; and improved access to valuable training and development opportunities.

A range of key success factors for mobility programs were identified. These centred on improving industry knowledge about exchange benefits and opportunities, and enabling strong collaboration and connectivity to increase awareness. The internet and professional and personal networks were key transmission channels. Fundamental issues like Occupational health and Safety compliance, management of professional and legal risks, and establishing strong communities of practice to help enterprises, and individuals arrange positive, well designed and well implemented mobility programs.

Key mobility barriers were identified as

- Lack of awareness within industry and more broadly
- High transaction costs associated with an exchange placements
- Legal and administrative barriers
- Lack of opportunities for quality placements, and
- Lack of research on mobility, and inadequate articulation of benefits at various levels.

Human capacity remained a consistent theme in the project outcomes. At a time of great challenge for the industry, people development is fundamental. It can drive workforce efficiency, then productivity, and profitability.

Recommendations and issues for further development have been identified and should be considered alongside the existing challenges and priorities facing industry. Further work is required to design an appropriate national level seafood industry exchange program. This should include clearer definition of the benefits and costs likely to accrue to the industry and other key stakeholders from such a program.

The FRDC's People Development Program should have a key oversight role in this regard. A partnership with the Agrifood Industry Skills Council to further develop and trial an exemplar project could maximize opportunities for enhancing skills development aspects, and the dissemination of results to other businesses and sectors.

Project findings reinforce the initial concept that there is a need for improved workforce mobility in the seafood industry. This is particularly so for the wild catch sector which faces serious workforce challenges in the immediate and near term. There is little doubt that a cost effective and efficient workforce exchange program could be set up for the aquaculture and wild catch industries however initial implementation, and ongoing success, will require genuine commitment from industry leaders and key government agencies.

Finally, unless the recommendations are considered by stakeholders, prioritized according to broader sectoral imperatives, and then appropriately resourced, it is highly likely that the potential value from some aspects of the project won't be realized.

Key Words: seafood industry, work-force, mobility, mobility barriers, labour, skills, exchange program, human capacity, industry culture, wild catch, aquaculture.

Background

This project was conceived in mid 2008 to inform emerging strategies that might mitigate severe demographic and labour force pressures constraining many parts of the Australian seafood industry. Occupational mobility was seen as a key factor in improving knowledge transfer and skills development in the industry, and generating greater efficiency from the existing industry work force.

By the time the project commenced at the end of 2008 the global financial crisis (GFC) was well established and turned the tide on almost unprecedented economic prosperity in Australia. Unemployment prior to the GFC was very low and the labour market across Australia was hot. Primary industry sectors like the fishing industry were struggling to keep both skilled and unskilled labour in the face of strong employment demand – particularly from the mining and resources industry. These conditions placed labour force dynamics at the front of mind for just about everyone operating a business in Australia.

In keeping with the urgent and specific nature of the problem the project was funded through FRDC's Tactical Research Fund. The project was to enable a series of crew/worker exchanges in the wild catch and aquaculture sectors, develop a national seasonal map of fishing and aquaculture labour demand, and explore the foundations of a national level seafood industry exchange program.

During initial scoping for the project, participants in FRDC's 2008 National Seafood Industry Leadership Program discussed the labour force exchange concept with a broad range of Australian wild catch and aquaculture production representatives. This initial scoping supported the need for increased attention on these issues, including initiatives to identify specific industry sectors that might benefit from a workforce exchange program.

Seafood Industry Context

The commercial seafood industry is well established across coastal Australia and makes a significant social, cultural and

Acknowledgements

The project steering committee (Dan Machin, Justin Fromm, Jo Ruscoe, Neil Garbutt, David Ellis, and Mike O'Brien) provided valuable contributions throughout the project.

Azure Consulting Group (Dan Machin) provided specific assistance in the latter stage of the project, including a brief report on people mobility programs.

People from the wild catch fishing and aquaculture sectors provided valuable advice and assistance during exchange planning, and contributed their time and knowledge during interviews.

Australian fisheries management agencies contributed valuable information to help compile the seasonal map of major fishing and aquaculture activities.

Fishwell consulting (Dr Ian Knuckey) provided a range of fishing images for the report, including those on the front cover. Jaragun Pty Ltd (Dennis Ah-Kee) also provided several images for use in the report.

FRDC funded the report through their Tactical Research Fund and provided welcome assistance with meetings, project administration & support.

economic contribution. Primary sectors are commercial wild catch fishing, aquaculture production and seafood processing. The industry in aggregate value terms is Australia's sixth largest food based primary industry. The combined gross value of production (GVP) of these activities in 2007–08 was $2.19 billion, with exports earning $1.3 billion (FRDC, 2010).

Aquaculture production takes place in predominantly regional and rural locations and produces finfish, crustaceans and molluscs, with a focus on high value species for export markets. Aquaculture production in Australia continues to grow and is well positioned to contribute to growing world food needs and domestic demand for healthy, tasty and high quality seafood. For the decade up to 2007-08 Australian Aquaculture production doubled from around 29,300 tonnes to 62,500 tonnes and was worth $868 million (ABARE, 2009). The medium term production goal for Australian aquaculture is 100,000 tonnes of finfish by 2015 (see http://www.frdc.com.au/fishingindustry/aqaculture). These recent increases, and likely future growth, contrast with an overall decline in production and value for wild catch fisheries.

Australian commercial wild capture fisheries are very diverse in terms of business scale, the scope of fisheries and capture methods, geographical range, and the diversity of marine and estuarine ecosystems in which they operate. High quality live, fresh and frozen Australian wild caught seafood is a premium product sold domestically and around the world with primary overseas markets being are Hong Kong, China, Japan, and the US. The wild catch sector is Australia's sixth most valuable food based primary industry and in 2007-08 produced around 178,400 tonnes of a broad range of seafood worth around $1.3 billion (see http://www.frdc.com.au/fishingindustry/wild-catch).

Seafood Industry Employment

ABARE's *Australian fisheries statistics 2008* (ABARE, 2009) cites Australian Bureau of Statistics (ABS) census data, August 2006, showing 6,108 people in various commercial wild-catch categories and 3,628 in aquaculture, with a total of 9,736. A further 4,202 are cited as being employed in fish wholesale and 2,001 in seafood processing, totalling 6,203. The grand total is 15,939.

Despite these statistics an accurate estimate of fishing industry employment is complicated as there is wide variation from year to year. In its 2005-10 research and development plan (FRDC, 2005), FRDC suggests that "Data collected by the ABS is not broken down in sufficient detail to be very useful for planning or strategic purposes. The data also tends to under-report employees, including through attribution of some fishing industry activities to other industries such as transport and generalised food processing. For example, in 1998 the ABS recorded 22,400 people directly employed in "wild catch, aquaculture and processing" and during 2004 recorded 12,000 people in "commercial fishing" (comprising the same components). This data does not appear to be consistent and does not compare well with data collected in connection with the number of boats, fishing licences (e.g. 16,000 Australia-wide in 2004) and other forms of fishing regulation. Unfortunately, the latter sources are not sufficiently comprehensive to substitute for ABS data."

For the aquaculture sector, the Aquaculture Industry Action Agenda in 2002 stated that the sector employs more than 7,000 people directly (ABS estimate: 5,050) and more than 20,000 people indirectly. For FRDC's conjectural estimate of direct-plus-indirect employment by sectors, the wild catch total was around 50,000; aquaculture 30,000; with post-harvest around 20,000–30,000. For employment in the commercial sector beyond production and processing (i.e. transportation, storage, wholesaling and retailing sectors) FRDC proposed a "conservative estimate" for 2005 of 20,000–30,000 people.

The resulting estimate (broad but highly conjectural) of direct and indirect commercial sector employment was between 100,000 and 110,000. This covers wild-catch, aquaculture and all post-harvest processes, including putative seafood components of transport, wholesaling, retailing and a small component of restaurant employment. Taking into account reductions in the size of the wild-catch sector and expansion of the aquaculture sector since 2005, the projected employment estimates for 2010 are provided in table 1 below (see also http://www.frdc.com.au/research/national-framework):

Table 1: estimated Australian seafood industry employment 2010

Employment	Wild Catch	Aquaculture	All post-harvest*	Total
Direct	20,000	10,000		
Indirect	30,000	20,000		
Total	50,000	30,000	20,000–30,000	100,000 – 110,000

Need

The initial project proposal identified several dimensions to learning, and knowledge transfer within the seafood industry. Specifically, a more hands on learning approach was recognized to be more aligned with the learning culture of the labour force, and the nature of most work in the seafood industry. The proposal also recognized that current skills shortages are constraining efficiency and in some cases limiting business growth within the seafood industry. Mobility in the industry is quite limited, particularly in comparison with other primary industry sectors like horticulture and wool production.

For the wild catch sectors a range of pressures have reduced the availability of full time work (e.g. catch and effort reductions for sustainability reasons and to improve economic performance; reduced access to some areas because of new marine parks, or conservation zones, and/or recreational fishing areas). For the aquaculture production sectors there is a trend toward growth however employment prospects and labour force efficiency are undermined by sustained and growing skills shortages nationally, particularly in rural and regional areas.

The seasonal nature of work in the wild catch and aquaculture sectors, the work itself, and the growing dominance of the resource and mining sectors in regional economies pose particular and growing challenges for the seafood industry. Seasonality, and in some cases reduced season duration, don't promote job security and there is ample evidence of skilled workers migrating to sectors (like mining) where the work is more reliable and the pay is better.

There is a clear opportunity for employers and employees to more actively respond to the seasonal nature of the industry and to develop strategies to increase mobility between sectors and seasons to increase the utilization of the existing labour force. This may also mitigate the concerns of new entrants to the industry that they will only ever have access to part time work in one fishery, sector, or region.

A 2010 Agrifood Skills Australia Environmental Scan report[1] highlights four key skills and workforce development challenges for primary industries, including the seafood sector, that need to be urgently addressed:

- Attraction of workers
- Adoption of higher level skills across the workforce
- Adoption and diffusion of new research, practice, and technology across the industry
- Workforce retention and effective skills utilisation

Industry liaison during the project suggests it's increasingly difficult to attract new workers into the seafood industry. In some cases there is a perception that work in the fishing industry is for those who

[1] The Agrifood Environmental Scan is a forward looking analysis of the factors influencing Agrifood workforce development, and the efficiency and response of associated training initiatives and systems. It is based on an extensive and national scale information collection process including literature reviews, a range of conferences, summits, focus groups and interviews.

have minimal skills. On the contrary much of the workforce is highly skilled at a vocational level and multi-skilling is highly regarded. Not surprisingly the related literature suggests that recognition of prior learning (RPL) is a key area for improving the self esteem and to some extent the employability of workers in primary industries (Queensland rural skills and training demand report, 2009).

Objectives

The project objectives are detailed below:

Table 2: project objectives

Objective	Description (what, how much, when)
4. Demonstrate knowledge transfer via a pilot seafood industry exchange program	A report analysing lessons and knowledge gained from personnel exchanges; targeted stakeholder consultation; and project survey information 3 owner/crew/staff exchanges (six people in total) or a similar variation on this will be pursued. Liaison with key stakeholders identified by the steering committee and via industry/stakeholder referrals will be conducted. The information from these processes will be analysed and presented via ongoing project communication, material published in FRDC's Fish magazine, and ultimately through the project's final report. The timing of crew exchanges will be based on peak and off peak fishing/aquaculture seasons, identified labour force need, and personnel availability. A mid project milestone report is due by 1 June 2009, final report by 18 June 2010.
5. Lay foundation for the development of a national seafood industry exchange program	As an outcome of this initial pilot project, guidelines for a larger scale national seafood industry exchange program will be included in the final project report. The guidelines will be sufficient to enable development of a follow on research proposal to trial and implement a national program if required.
6. Identify seafood industry labour force mobility barriers, and identify possible solutions	Labour force mobility barriers and possible solutions will be identified and analysed during the project - specifically during the crew exchanges, and via stakeholder consultation and surveys. Preferred solutions and their rationale will be identified in the project's final report.

As the project progressed it became evident that the opportunity to run actual workforce exchanges with the time and resources available was likely to be limited. In responding to this the project Steering Committee agreed to keep the objectives as originally described, however the methods used to achieve the objectives were refined to reflect the absence of practical learning from doing exchanges. This is described in more detail in the Methods section of the report.

Methods

Following project approval late in 2008 Andy Bodsworth, Director of Cobalt Marine Resource Management Pty Ltd, was appointed as the Principal Investigator and Industry Exchange Manager for the project. Co-investigators were Dan Machin (Executive Officer of the WA Aquaculture Council), and Justin Fromm (then FRDC Project Manager - Research). A core steering committee group of Dan Machin, Justin Fromm, and Jo-Anne Ruscoe (then FRDC Projects Manager – People Development) was formed initially. David Ellis (Research Manager for the Australian Southern Bluefin Tuna Industry Association) and Mike O'Brien (Northern Region Manager for the Raptis Fishing Group) joined the Steering Committee early in 2009 as Fishing and Aquaculture Industry employer representatives.

Initial work was focused on the development of a project plan to guide project activities and clarify the scope and details for the project; and the preparation of a national seasonal map of major wild catch and aquaculture sectors (Appendix 1 & 2). The seasonal map was to be used initially to guide selection of candidate fisheries and aquaculture enterprises to participate in the workforce exchange program.

The duration of exchanges was originally proposed as in the order of 4-6 weeks on the basis this would provide sufficient time to gain useful insight into whether exchanges would be a valuable knowledge transfer mechanism; and enable better understanding of labour force mobility barriers. It was envisaged that around 3 exchanges (6 people in total) would take place. The proposal recognized that this was a small sample and thus the results would need careful interpretation. Recognising the pilot nature of the project, the chosen approach was intended to deliver valuable practical insights and lessons around industry knowledge transfer and mobility issues, and inform the development of a larger scale program if that was considered appropriate

The original project methods were described in three phases:

Table 3: project phases

1. Pre Exchange Phase	Identification of candidates for the exchanges Survey instrument design Pre-exchange candidate and employer interviews
2. Exchange Phase	In-vivo exchange interviews
3. Post Exchange Phase	Post Exchange interviews with candidate and employers Analysis of results Final Report

In the project scoping phase, before final approval, the co-investigators had canvassed their fishing industry networks, including the Tasmanian Rock Lobster Association, Mandurah Crab Professional Fishers Association, National Seafood Industry Leadership Program Alumni, Western Rock Lobster Council, Queensland's East Coast Trawl Fishery, and the Spencer Gulf Prawn Fishery Association seeking support for the project proposal. There were several promising leads for exchange participants at that stage, to be confirmed after project commencement.

After analysis of exchange results the final project report was to be prepared primarily for use by the FRDC's People Development Advisory Group, but also for wider dissemination and extension to stakeholders, including wild catch and aquaculture industry sectors, and relevant government policy, employment and training programs.

For the seasonal map information was obtained from a review of available published literature, websites, and liaison with state, territory and commonwealth management agencies for wild catch fisheries and aquaculture sectors.

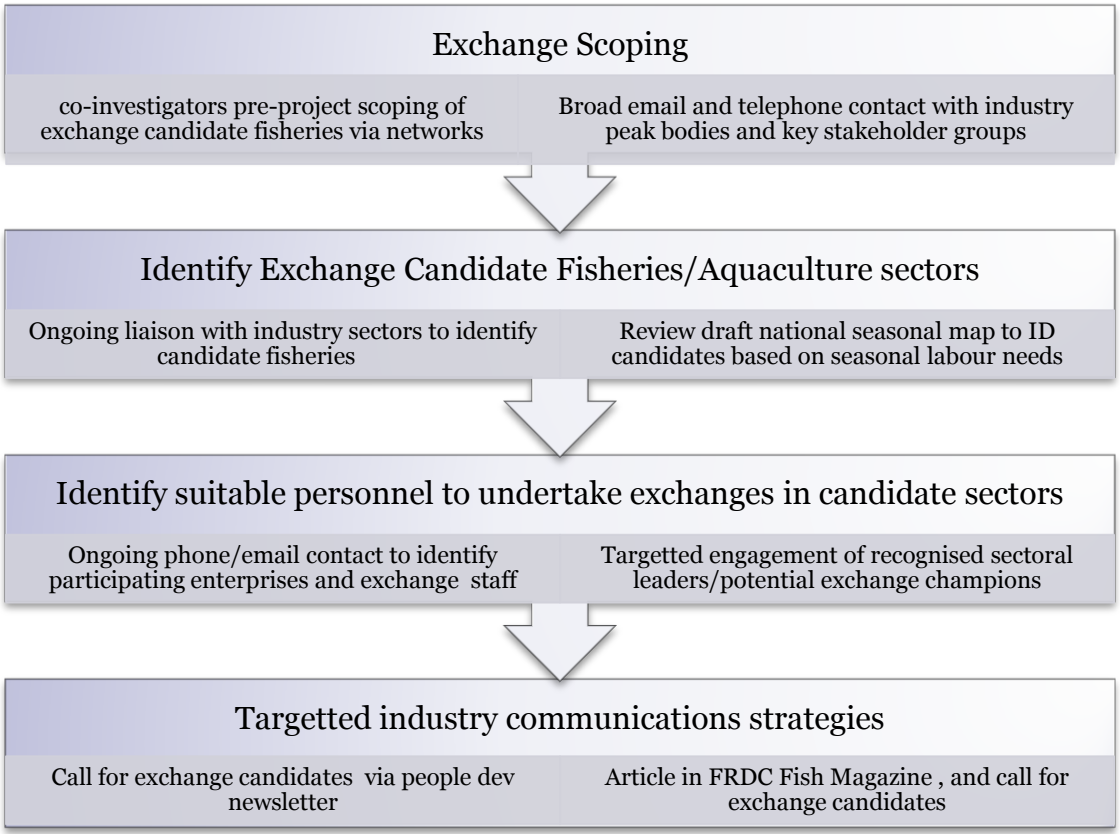
A seasonal map reporting template for completion by identified representatives in each management agency was distributed by email and followed up via phone. The decision to rely on these agencies for the information was intended to minimise the use of limited project time attributed to the PI to ensure this time could be better directed at the primary project deliverables. This efficiency was not adequately realized, with extensive follow up needed for some jurisdictions to encourage completion of the relatively straightforward template. After several months of delays the PI completed the seasonal map from information via literature and website searches, and some follow up with individuals in agencies.

To identify possible exchange candidates and build on initial industry liaison by the co-investigators, contact was established via phone and email with seafood industry peak bodies and selected industry associations. This served to introduce them to the project and its objectives, and seek their initial consideration of possible candidate fishery and aquaculture businesses for exchanges. Based on a range of recommendations from the Steering Committee, contact by phone and email was also made with a number of other key industry stakeholders that had an interest in labour force efficiency issues.

The process to identify candidate wild catch and aquaculture sectors, and seek recommendations for staff to complete actual exchanges is summarised below[2].

[2] Efforts and time spent identifying exchange candidate fisheries and aquaculture sectors and then seeking viable exchange candidates should be considered in the context of overall resources (time and money) to conduct the project. In practice the ability to identify candidates and get strong commitment from employers to participate in an untested pilot exchange program was difficult and resource (time) intensive.

Figure 1: process to initiate workforce exchanges



As efforts to identify suitable exchange candidates in the target fisheries progressed it became clear that getting commitments to actual exchanges was going to be difficult in the time available. The initial deadline for project completion (final report due 1 December 2009) was revised to accommodate additional efforts to identify exchange candidates however this failed to eventuate in any exchanges being conducted. During its 18 February 2010 teleconference the Steering Committee decided to cease efforts to arrange any exchanges. The approach shifted to a more theoretical analysis and evaluation of the feasibility of a national seafood industry exchange program.

The revised approach is summarised below.

- No further attempts were made to arrange exchanges because of the limited time available until the draft final report was due, limited resources, and the time already spent attempting to run exchanges with no success.
- Targeted stakeholder interviews were to be conducted, primarily via phone, to capture knowledge about mobility issues and labour force efficiency issues/opportunities
- The PI would liaise with David Ellis to determine if attendance at the Tuna Industry focused Port Lincoln Jobs and Skills expo was likely to be valuable for the project outcomes (i.e conduct industry and employment provider interviews, present seasonal map information, speak with job placement and industry people)

- The review of 457 visa approaches compared with possible exchange approaches would not be done (this had been added to the project scope after approval during development of the project plan). It was considered that the 457 review was potentially large and complex and outside the scope and resources of the project.
- The PI would approach Dan Machin to determine whether he could assist with some specific aspects of the project noting his specific expertise with the aquaculture sector (i.e. review the European Union's Aqua TT program, identify and interview WA based stakeholders).

A summary of the evidence collection approach used to deliver against the revised project approach is provided below.

Table 4: revised project approach in the absence of exchanges

Project objective	What do we want to achieve?	Source of evidence
• To **demonstrate** that a seafood industry exchange program is an **effective means to transfer knowledge and skills** between fishers	In the absence of actual exchanges, demonstration via evidence from similar industry sectors/programs elsewhere, and via interviews of experienced seafood industry representatives. If possible include sub sample that have been involved in private company exchange programs	Literature reviews and analysis Interview industry managers, peak bodies, and businesses Literature Reviews Information obtained via broader stakeholder liaison
1. To lay the **foundation for the development** of a national seafood industry exchange program	First establish that a national level seafood industry exchange program is needed and appropriate & validate need with key stakeholders (seafood industry, various government) What needs to be in place to ensure an effective national exchange program? What would such a program look like? How would it work, At what cost? Which industry sectors should be targeted?	Literature review; Interviews with key industry representatives & stakeholders Interviews and liaison with tuna industry and broader stakeholders at Port Lincoln Jobs Expo
2. **To identify** the **impediments and solutions** to **increasing the mobility** of the Australian seafood industry's workforce	What are the existing barriers and likely future barriers to labour force mobility at appropriate spatial scales (local /regional; national scale mobility). Categorise nature of barriers. What are the likely solutions to these barriers? What factors will encourage mobility within a region, and/or at a national scale?	Literature review for domestic and/or international seafood industry sectors; include other primary industry sectors (e.g. fruit picking). Analysis of literature and interview results to determine drivers for increased mobility.

Results & Discussion

The Results section has been structured to link clearly to the three primary project objectives:

1. Demonstrate knowledge transfer via a pilot seafood industry exchange program
2. Lay foundation for the development of a national seafood industry exchange program
3. Identify seafood industry labour force mobility barriers, and identify possible solutions

The project was to arrange and run a series of exchanges, and use that experience to develop a more practical understanding of the feasibility, costs and benefits, and barriers relevant to a larger scale national exchange program. Late in 2009 it became apparent that getting exchanges finalized and underway in the time available was going to be challenging. This was somewhat surprising given the expressions of support from employers for the exchange concept, which continued as the project progressed.

While no exchanges were completed, the project identified where some exchanges had occurred previously. Reviewing these has delivered valuable insights to inform the project outcomes.

Results against Objective 1

Objective 1 - to demonstrate that a seafood industry exchange program[3] is an effective means to transfer knowledge and skills between fishers

The absence of actual workforce exchanges limited achievement of this objective. Despite this the subsequent literature reviews, interviews, and ongoing stakeholder liaison and communication throughout the project delivered valuable insights about how and why a well designed exchange program could enable skills and knowledge transfer in the seafood industry.

Overall the project did demonstrate that an on the job exchange program could effectively transfer knowledge and skills, and was relevant to the nature of work, and learning profiles, of people in the industry. This conclusion was supported by the small number of industry representatives interviewed, particularly aquaculture representatives that were already running some form of business to business exchange initiative.

Why weren't any exchanges completed?

Whilst the absence of any actual exchanges is disappointing, the experience does suggest a range of real life practical barriers were operating. These are clearly relevant to achievement of the first project objective and are discussed further below.

[3] Exchanges may be deliberate staff exchanges between companies within a sector (i.e. Aquaculture), or between business groups in a company; seasonal movement of wild catch crews across fisheries; or represented by new workers/managers coming in to your workforce.

The Global Financial Crisis

Discussions with key stakeholders in the first half of 2009 suggested some of the urgency associated with seafood industry labour force availability had eased with the domestic economic slowdown from the Global Financial Crisis in 2008. This was particularly relevant in some regions where mining demand was previously impacting availability of semi skilled and skilled labour for fisheries and aquaculture workers. Despite effects of the GFC slowdown, the majority of stakeholders continued to support the strong need for improved labour force efficiency and the exchange concept.

A recent FRDC funded Ridge Partners report *Overview of the Australian Fishing and Aquaculture Industries: Present and Future* (Ridge Partners, 2010) observes that there is a clear link between a slowing of seafood production and recessions (based on FAO statistics). The GFC induced domestic slowdown, whilst less significant for Australia than most countries, did cool the Australian labour market. This observation was supported by some industry stakeholders during consultation and development of the seasonal map of Australian wild catch fishing and aquaculture.

Competing Industry priorities

Despite widespread recognition of the need for improved labour force availability and efficiency, and obvious stakeholder and industry support for the exchange concept, it was very difficult to get strong commitment from industry/peak bodies to take part in an exchange program. This should be considered in light of the overall resource limitations for the project (time and money). Without exception stakeholders expressed support for the project concept but were also reluctant to make their own staff available as part of an exchange due to more pressing business priorities.

There is also evidence of a supply and demand disconnect in terms of skills development in the seafood industry leading to a general lack of support for education and training. This may lead employers and managers to under-value exchange program benefits. Effective and efficient training and skills development must be demand driven and offered in a way that is suitable for industry. Providing the right product at the right time is important. In addition the benefits of training and/or skills and knowledge exchange need to be clear to all. The *what's in it for me* concept for both employers and employees is a key to success.

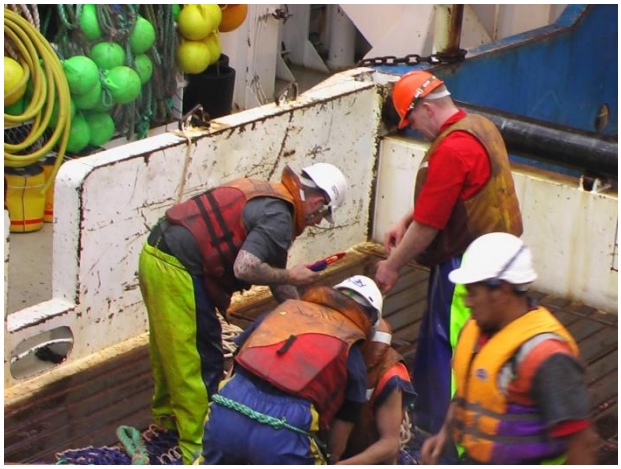
The reluctance to get involved highlights the contrast between obvious industry support for the exchange concept, and the reality of committing scarce staff resources to a project with some operational risk and somewhat intangible outcomes for the company concerned. It suggests that many sectors of the wild catch and aquaculture industry are (not unreasonably) pre-occupied with day to day business and its risks and challenges. This is understandable but undervalues the truth that today's strategic planning will mitigate tomorrow's crisis.

Interestingly, the Ridge Partners fishing industry overview report presents an analysis of likely future scenarios for various fishing and aquaculture sectors. For the wild catch sector, under the base case or business as usual scenario, the industry's human capacity is identified as a key risk area. Specifically, the

sector may be *unable/unwilling to pay to retain skills, and needs to do more with existing talent* (Ridge Partners, 2010).

Seafood Industry knowledge & skills transfer

The initial project proposal identified the relevance of work based or hands on learning to the seafood industry in general, and noted that an exchange program was generally aligned with this sort of approach. Evidence suggests this focus on learning by doing is a key aspect of organizational and workplace culture within the seafood industry. Learning is often incremental, developmental, and socially embedded (Agrifood Skills Australia, 2010).



Seafood industry demography is a key consideration in establishing effective skills development and transfer approaches, including the implementation of a successful exchange program. In its recent *Overview of the Australian Fishing and Aquaculture Industry* Ridge Partners provided some useful demographic details. In 2008 there were 13,000 people directly employed in wild catch, with an estimate of direct and indirect employment of around 60,000. The nature of employment is variable, fluctuating according to business fortunes, changing catch and effort levels, seasonal influences, and the seasonality of work.

Much of the employment is in regional and predominantly coastal Australia. Agrifood Australia reports that the agriculture and fishing sectors have particularly worrying and unsustainable demographics, particularly in the context of a growing need for food production and a squeeze on available semi skilled and skilled labour. The sectors have:

- The highest median age workforce in Australia at 48 years
- A particularly high proportion of workers aged over 55 years (35.8 per cent); and
- A disproportionately low number of workers aged less than 35 years (23.6 per cent)(Agrifood Skills Australia, 2010)

The diversity of enterprises making up the wild catch, aquaculture production, and seafood processing sectors also makes it difficult to easily categorise the labour force for skills development, or to attach a particular learning profile (see Figure 2 below).

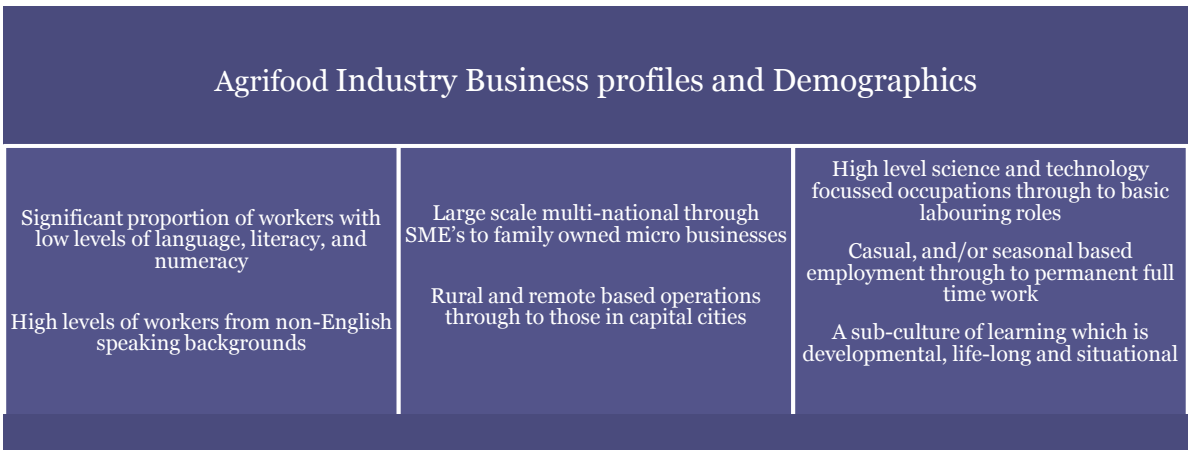


Figure 2: Agrifood Business Profile and Demographics (Agrifood Skills Australia, 2010)

There is little evidence of more formal/organized skills and knowledge transfer focused exchange programs in Australia's fishing industry. Some interview respondents identified several industry to industry visits directed at knowledge transfer and extension and reported substantial benefits from these brief initiatives. An example where a South Australian prawn trawl fishery delegation travelled to Queensland to meet with counterparts in the Queensland east coast trawl fishery was cited. Whilst focused on the merits and details of a co-management focused approach to these type of fisheries, the respondent also cited greater awareness of the value of networks and network based knowledge transfer, and a greater industry awareness of the value of the co-management arrangements they had worked to develop and maintain.

The mobility programs that were identified in literature were more focused on mobility between industry and universities; and mobility between universities. More precise data on these sort of transfers in the seafood industry was difficult to obtain within the scope of the project. A brief review of information available on international mobility initiatives suggests they take one of five main forms:

1. mobility between industry and universities and vocational providers;
2. mobility between universities (staff and students);
3. temporary migration (limited stay often linked to specific job contracts);
4. mobility within and between enterprises; and
5. cross-border commuting of various kinds.

Table 5 below provides details of the identified FRDC and Seafood Cooperative Research Centre (CRC) mobility programs:

Table 5: Categories of FRDC and CRC mobility programs available from 2008.

Seafood Mobility Scholarships	Industry Strategic	Industry Workforce Mobility	Gov't funding Body	Researcher
Seafood CRC Bursary,[4]	Various projects and visits (refer appendix 5)	Nil	Nil	Various (see appendix 5)
FRDC People Development Scholarships	Nuffield Australia Farming Scholarship FRDC & SEA Agribusiness Executive Scholarships Peter Dundas-Smith Scholarship Indigenous Development Scholarship Emerging Leader Governance Scholarship Governance Scholarship for Women WINSC Professional Development Scholarship Support to attend conferences	International Travel Bursaries	Nil	Visiting Expert Bursaries

Aquaculture worker at PEJO Enterprises QLD. Image courtesy Jaragun Pty Ltd

The companies that currently undertake inter-business exchanges (predominantly aquaculture) focus on the following knowledge and skill areas[5]:

- bench marking/work force productivity
- feed and feed management
- harvest techniques
- equipment use and maintenance
- stock production planning; and inventory management

[4] Source Seafood CRC website – www.seafoodcrc.com.au
[5] All aquaculture interviewees expressed interest in development of management soft skills for management training of frontline staff.

Results against Objective 2

Objective 2 - to lay the foundation for the development of a national seafood industry exchange program

The project provided a strong conceptual framework around the key attributes and capabilities needed to sustain a successful national level exchange program. It used several core methods to determine that an exchange program was needed, an appropriate vehicle for skills and knowledge transfer, and was supported by the industry and other key stakeholders. The key success factors for such a program were established, as were some principal design criteria and characteristics for successful mobility programs. Some foundational level industry and stakeholder capabilities were also identified and evaluated in the context of a future exchange program.

Nonetheless, in the absence of actual exchanges there remain a number of important questions about the operational realities of running such a program, and the level of funding and other contributions that may be necessary to make it work.

A national exchange program – need and relevance

Occupational mobility will be increasingly important for the modern seafood industry, and critical for some sectors that face capacity constraints from challenging demographics and increasing competition for scarce labour. Building this capacity by using existing labour force skills and experience more efficiently will help correct skills imbalances across sectors and regions. In its 2010 Environmental Scan, Agrifood Skills Australia illustrates the importance of leveraging off existing labour force capabilities:

> *"We must recognise the deep interdependence of co-located industries within the regions and that only through collaboration and shared risk will we be able to grow and retain robust skilled labour pools".*
>
> *"Building robust labour pools in rural and regional Australia through cross-industry, locally based collaboration of enterprises, local governments and shires and their respective communities"* (Agrifood Skills Australia, 2010).

Collaboration and co-ordination at a regional scale is a key message in contemporary literature covering primary industry labour force efficiency measures (e.g. Queensland Rural Skills and Training Report, 2009; Agrifood Skills Australia, 2010). It is also a focus of recent strategic research, development, and extension (RD&E) planning by the FRDC (FRDC, 2010). The recent Eyre Region Development Board (ERDB) Port Lincoln Jobs and Skills Expo in South Australia was a good example. It brought together regional job placement providers; ERDB staff; representatives from the Australian Government Department of Education, Employment and Workplace Relations; local employers and job seekers. The Expo was a collaborative initiative to address some of the difficult issues arising from recent catch reductions in the Southern Bluefin Tuna Fishery and Aquaculture Industry.

Research on mobility program benefits for the Australian seafood industry is scarce however evidence from European employers suggests benefits of mobility exchanges are defined more in terms of 'personal gains' for the individual participants. For Australian industry representatives interviewed in this study, the consensus of opinion (noting a relatively small sample size) was contrary to the European experience. Overall, the Australian consensus was that mobility programs could provide an effective opportunity for short and long term benefits to business productivity and knowledge management. One project interviewee commented:

"If a staff mobility program was available, I would use it tomorrow." *Project Interviewee*

In fact, many of the WA based aquaculture sector interviewees already had private business to business staff exchanges underway or planned. They also reiterated the high costs of relocating staff, even temporarily, in regional and remote areas. This was raised as a significant barrier for on-going inter-business exchange programs.

<u>Specific benefits for enterprises</u>

Benefits of placements for employers do not only refer to competence development of future employees, though this often is seen (by employers) as the most important benefit.

It is noteworthy that the commercial fishing industry considered that addressing labour shortages may be better achieved through integration into existing harvest trails, and backpacker and seasonal worker networks. A brief review of the Australian government's Harvest Trail 2010 publication, and the Australian Working Holiday facebook website, found that commercial fishing seasonal work opportunities are not well documented.

The what's in it for me principle is likely to be a key driver of exchange program success. Put somewhat differently "You will increase the take-up of training if fishers were convinced that a trained crew would mean an improved catch and an increased price for it".. (Queensland rural skills and training demand report, 2009) The ability to use skills and knowledge effectively at work is what really matters for productivity: not just the acquisition of skills *per se*.

Exchange Benefits

Benefits of placements for employers aren't just about competence development of employees, although this is often seen by employers as the primary benefit. Other benefits for employers are:

- Improving the profile and attractiveness of the sector.
- Improved staff retention (job attractiveness and career development pathways)
- Improve professional and social networks
- Reduced skill shortages in particular sectors or regions
- the transfer of (new) technologies and know-how
- new ideas, working approaches, and knowledge of new markets;
- greater technical understanding;
- Could build a pool of applied researchers with a good understanding of business drivers and needs, and
- reduce the transactional cost of locating new staff (i.e. from TAFE's or universities).

For this project there was absolute consistency between the reviewed literature on the design of best practice mobility programs and the attributes desired by interviewees. A key elements that seafood businesses are looking for is a flexible[6], "low doc" exchange program. One that incorporates a range measures to lower transaction costs and improve the quality of exchanges over time.

It seems best practice mobility programs can overcome some fundamental challenges by including a range of attributes:

Table 6: key success factors for mobility programs

Key Success Factors	Key challenge minimised	Useful Resources
Use a website (web 2.0 technology) to provide the following services and information: - match-making between demand and supply; - Map of exchange – the site gives an overview of the business providing information to potential participants wanting to take up a mobility exchange; - Information on before, during and after exchange planning for participants; - Collect existing mobility schemes; - Databases of good practice information - Lists of ambassadors for mobility - examples of real experiences.	Awareness, Transactional Costs	Portal site http://ec.europa.eu/ploteus/home.jsp?language=en Seasonal Map http://www.wapitc.org/calendar/seasonal_calendar.html Map of Exchange Opportunities http://www.aquatnet.com/index.php/19/institution-search/ pre and post exchange planning http://www.mastersportal.eu/students/best-practice/ FAQ http://ec.europa.eu/education/programmes/llp/erasmus/faq_en.pdf
- Develop a publicity campaign to communicate to target groups - Use trusted existing channels and trusted networks to "narrow cast" message	Awareness	
- Engage with industry associations to facilitate SME placements. - Consider legal status for participants - Develop measures for dealing with health, safety and liability insurance at the workplace	Legal/ & Administrative Barriers	
- Training of staff involved so they can deal with issues related to mobility. - Quality charter for the hosting of participants.	Quality	

[6] in terms of duration and category of exchange.

Key Success Factors	Key challenge minimised	Useful Resources
- Create shared service centres for placement organisers and SMEs - Support and create communities of practice - Invest in long term partnerships, creating formal basis for co-operation and exchange of learners and companies for quality placement	Community of Practice	
- Connect and enthuse key-research funder to invest in mobility research. - Conduct long term research on benefits, obstacles and solutions for mobility	Research	

Another fundamental enabling capability centres on the ability and commitment of industry leaders, particularly their ability to solve problems and empower those in the industry to do the same…

"How do we in the industry actually benefit from adversity in this case where there have been large catch reductions – or where there are fluctuations in seasonal work – how do we respond positively as an industry?" David Ellis, Southern Bluefin Tuna Industry Association, Port Lincoln

Workplace culture is a key driver for improved business performance and a fertile area for productivity improvements in the seafood industry. Interviews with a small sample of operational managers in the wild catch and aquaculture sectors suggested a direct link between the quality of human resource management and the difficulty in attracting and retaining skilled workers.

Southern Bluefin Tuna Harvest, image courtesy AFMA.

The national seasonal map for wild catch fisheries, and aquaculture

The seasonal map of aquaculture and wild catch seasons developed for the project (Appendix 1 & 2) pulled together a disparate collection of information from state, territory, and commonwealth fisheries management agencies; and aquaculture organizations. It is based on the more valuable wild capture fisheries (annual GVP greater than AUD 5 million) and aquaculture sectors (annual GVP greater than AUD 2 million).

By recording periods of peak labour demand for each fishery and aquaculture sector, the map identifies areas where there may be seasonal labour shortages or over-supply. It was used to inform the selection of candidate fisheries and aquaculture sectors for exchanges, and to inform approaches to State based seafood industry bodies, as well as direct canvassing of larger fishing and aquaculture ventures. Unfortunately none of this enabled definitive commitments to undertake exchanges.

Table 7: South Australian extract from the Wild Catch seasonal map (see Appendix 2)

Fishery	Main Ports/location	GVP	Peak Season	Comments
SA Prawn Fishery (3 zones)	Venus Bay, Ceduna, Coffin Bay, Port Lincoln, Wallaroo, Port Pirie, Port Adelaide	$35,900	December to June	Mining sector primary competition for crews. Trend may change due to recent economic factors (higher Aus dollar), and because of mining activity slowing down.
SA Marine Scale fish	Whole SA State	$18,500	All year	Owner operator provisions apply.
SA Sardines	Port Lincoln	$16,300	All year (peak Jan to May)	Purse seine fishery
Charter Fishery	Primary SA ports	$4,000[7]	All year – primarily summer months	
SA Northern Zone Rock Lobster Fishery	Port Lincoln, Kingscote, Yorke Peninsula	$18,000	November to May inclusive	Mining sector main competition for crews however trend may change due to improved fishery profits and mining activity slowing down.
SA Southern Zone Rock Lobster Fishery	Cape Jaffa, Robe, Beachport, Southend, Port Macdonnell	$80,000	October to May inclusive	The Southern Zone is more profitable than the Northern Zone and so crew retention less of an issue.
South Australian Abalone Fishery	Port Lincoln, Elliston, Streaky Bay, Port MacDonnell, Blackfellows Caves, Port Hughes, Kangaroo Island,	$31,000	All year, most catch in early summer in response to Chinese market.	Majority of product is canned.
Lakes and Coorong Fishery	Goolwa and Meningie	$7,500	Spring/summer	Most fishing (partic Mulloway and pipi) during spring and summer
Blue Crab Fishery	Port Broughton, Port Adelaide	$5,700	July/August (Spencer Gulf) February/March (Gulf St Vincent)	Small crews. Mining sector has attracted workers away from fishing. Some licence holders offering more reliable and flexible working conditions to attract and retain workers.

The project Steering Committee recognized the potential value of the seasonal map and have suggested that it be refined to make it more useful, and perhaps interactive, as a web based tool to inform employers, job seekers, and possible exchange candidates about seasonal employment opportunities.

[7] Approximate - estimate based on internet research

Employment agencies were also recognized as a key part of the process of identifying work opportunities, and potentially for exchange opportunities. Following a presentation on the project and the seasonal map a the Port Lincoln Jobs and Skills Expo, several employment agencies expressed strong interest in displaying its seasonal work information.

The project has illustrated that at a national level the seafood industry would benefit from better integration with seasonal labour markets. There are a range of opportunities in this regard. Tourism Australia's Australian working holiday facebook site (with a following of 35,000 people), and the National Job networks annual publication, the *National Harvest Guide* were identified as good candidates. There are also opportunities for peak industry bodies and member organizations to refer members to existing advice on recruiting seasonal or back packer workers, for example, from Rural Skills Australia.

At a national level it may be possible for the industry to create and maintain a website that can show case backpacker, seasonal or exchange opportunities relevant to the seafood industry. This website could include the project's seasonal map.

The seafood industry is under pressure from a vast array of new initiatives and various challenges in relation to environmental sustainability, labour force constraints and regulations, major profitability pressures, and a myriad of other ongoing business challenges. In this operating environment the efficiencies from leveraging off existing employment placement systems, and mobility initiatives for other sectors like the Australian government's fruit picking harvest trail initiative, are attractive.

Exchange program design & foundational attributes

The dynamics between demand for seafood workers driven by employers, and the supply of workers are not as simple as just matching people and their qualifications to jobs. Although this is core business for job placement agencies, research suggests employers need to articulate their skills requirements more clearly and more strategically. This will enable more efficient use of existing skills in the workplace. Key factors for productivity include job design and efficient organization of work and its practices, the quality of management, and importantly a workplace culture that encourages learning, innovation and autonomy (Skills Australia, 2009). These are all important attributes of an effective mobility approach.

Interview respondents supported these observations. Responses to questions about the impacts of seafood industry skills and labour shortages suggested that companies adopting best practice management and leadership, including investing in, and mentoring staff through the organization, were less impacted with respect to staff and skills shortages. Using existing skills and knowledge efficiently in the workplace is a key determinant of sustainable workplace productivity.

Labour force exchange experiences must be positive. Such programs will have a very short lifespan and be an opportunity lost if they are merely a source of short term labour with no real investment in people. An exchange program should be clearly placed in the broader context of demand driven skills

development. The immediate and more strategic empowerment of individuals and the industry as a whole is critical.

In addition to alleviating immediate labour and skills shortages on a seasonal basis, an efficient exchange program would also enable gradual progress against skills and knowledge priorities for the fishing industry. Queensland's 2009 rural skills and training demand report identifies skills and training priorities for the wild catch sector based on a comprehensive suite of surveys, focus groups, literature reviews, and interviews with industry skills groups. They are reproduced below (Queensland rural skills and training demand report, 2009).

Table 8: skills and training priorities – Queensland wild catch fisheries

Skills and training priorities for Queensland's wild catch fisheries	
For Managers	handling the catch preparing the catch for market species identification
For Skippers	handling the catch species identification• ropes, splices, winches and basic equipment handling.
For Deckhands	basic seamanship ropes, splices, winches and basic equipment handling species identification and grading packing and presenting seafood food safety navigation reading sounders and plotting a course basic maintenance of equipment

Consistent with its theme of a forward looking synopsis, the Agrifood 2010 Environmental Scan provides strategic insights into skills development imperatives for the seafood industry. Many of these could provide the building blocks for a well considered and strategically focused industry mobility program (Agrifood Skills Australia, 2010).

Table 9: skills development in the seafood industry

Major challenges & trends	New and emerging skills	Delivery Requirements
• Attracting, training and retaining workers at all skill levels • Growing contemporary industry leaders engaged in skills and workforce development • Linking skill development with industry licensing and compliance • Ensuring occupational health and safety and food safety are integrated with risk management • Evolving job roles which require higher, often technician orientated skills • Diffusing new practice and knowledge from research and development work into the workforce via training	• Genetics, selective breeding and biotechnology • Seafood processing, value adding, supply chain skills underpinned by new technologies • Natural resource management • Compliance and regulatory requirements • Biosecurity, emergency pest and disease response • Animal behaviour, health and welfare • Market research and marketing	• Building blocks approach to skills development in support of full qualifications • Integrated and innovative delivery of skills combined with the diffusion and adoption of research findings to raise enterprise productivity

These priority areas were also identified by seafood industry stakeholders during interviews, and the industry liaison directed at arranging exchange trials earlier in the project. They reinforce the advice from stakeholders that multi-skilling is an important part of developing and maintaining an effective wild catch and aquaculture sector labour force. In the wild catch sector physical space and carrying capacity of vessels is often very constrained, and for both sectors labour force efficiency delivered via more skills with less people is a key objective to support profitability.

Engaging indigenous job seekers and employees

Training, skills and employment related literature reviewed suggests there are good opportunities to work with indigenous job seekers and related programs to both alleviate immediate labour and skills shortages for the seafood industry and enhance employment opportunities and skills and career development for some indigenous communities.

Aquaculture has been previously identified as an area of opportunity for indigenous job seekers with the Australian Government's 2001 National Aquaculture Development Strategy providing a strong basis for subsequent development of opportunities and broader capacity development. The Strategy suggests a range of engagement activities including the development of suitable national level education and training programs, and suitable research, extension and support programs (Lee, C. and Nell, S., 2001).

More recently Jaragun Pty Ltd completed a collaborative North Queensland based project demonstrating strong training and employment placement outcomes and showing that the aquaculture/seafood industry is an appropriate sector for employing Indigenous job seekers. Jobs were available for all 16 job seekers who completed their training, with around 87% subsequently employed in permanent and seasonal full-time positions in the industry. The success of the Project was partly

attributed to strong industry collaboration in the development and delivery of training. Thus employers had confidence that training would meet specific workforce skills needs (Jaragun Pty Ltd, 2009).

Several indigenous training providers and job placement agencies present at the March 2010 Port Lincoln seafood industry jobs and skills expo expressed interest in the seafood industry exchange concept, and recognized the utility of the seasonal map to target employment and skills development opportunities. Whilst some recognized that there were limitations in terms of longer term employment opportunity for people engaged in seasonal work they did note that a proportion of aboriginal job seekers were highly mobile and actively searching for work, particularly at a regional scale. They suggested that having ready access to current job opportunities, including seasonal employment opportunities via job placement networks, was a key factor in engaging these more mobile workers quickly.

Field training at MG Kailis, image courtesy Jaragun Pty Ltd

Key criteria to engage indigenous job seekers effectively in training and employment (and potentially in an exchange program) from the literature reviewed (Lee and Nel; Jaragun) were:

- strong cross cultural awareness
- mentoring—mentors play a key role for Indigenous employees and for the workforce more broadly
- the need to address life skills issues and specific issues regarding work in the chosen industry sector
- support for employees, managers and supervisors
- effective pre-employment strategies, screening for prospective trainees
- transport for trainees/job placements
- clear and genuine career pathways for Indigenous employees

Results against Objective 3

Objective 3 – to identify the impediments and solutions to increasing the mobility of the Australian seafood industry's workforce

By synthesizing a range of information on mobility factors, derived from literature review, interviews, project team experience, and extensive stakeholder liaison the project has been able to identify key impediments to mobility. This process has also informed the development of solutions – or partial solutions – to these primary barriers.

An absence of actual exchanges has constrained achievement against this objective in a practical context. This in itself has provided valuable insights into the way such a program should link with the seafood industry culture, recognize its significant operating pressures, and leverage off existing initiatives to increase labour force efficiency via arrange of well proven strategies.

Mobility Barriers

There is limited research literature on mobility. Most of the emerging research comes from the European Union, with a focus on knowledge management. The single most important driver of mobility in Europe is the European Commission, whose purpose is the creation of a pan-European identity. Other jurisdictions, for example the USA do not have the same strategic policy drivers. Nonetheless some valuable insights have arisen during efforts to arrange exchanges for the project. These have been supported by information collected from stakeholders throughout the project.

The table below describes the more significant mobility impediments that were identified.

Table 10: identified mobility barriers

Challenges to mobility	
Lack of awareness	There is, particularly for small to medium enterprises (SME), limited awareness of: • the different opportunities for exchange placements; • the funding and grants programs for such placements; • the (potential) benefits of exchanges placements for the participants; • the (potential) benefits for the enterprise.
High transaction costs associated with an exchange placement	Costs of participation in an exchange can be a considerable obstacle • cost of finding information on programs; • hiring extra staff during the period when apprentices are absent; • the contractual obligation for employers to pay the wages of the participants during their stay; • Costs of supervision of the participants in an enterprise placement ; • Cost of ensuring that the exchange is a quality experience, and implementing continual improvement processes; • Higher costs for applicants from less favourable socio-economic backgrounds; • Social and economic security – particularly for extended exchanges; • Provision of accommodation for participants;

Challenges to mobility	
	• Legal and administrative costs (see below).
Legal and administrative barriers	Regulatory and administrative procedures can make it difficult, particularly for SME's, to participate directly in a program. Key issues are: • too much 'red tape' in connection with applying for funding; • too much 'red tape' in connection with reporting; SME's may have to rely on mediating organisations, such as industry associations, for reducing their control over issues such as target State, starting time, or duration.
Lack of quality placements	This has three key issues: • quality awareness (make participants and host aware of 'quality' or the lack of it); • defining quality (describing what quality is, establishing quality criteria); • quality assurance (facilitating quality at a hands-on level).
Lack of research on mobility	This complicates the process, increases the risk of failure, and reduces program efficiency

Industry Culture & Operating Pressures

The industry operating environment and pervading culture are key drivers of labour force efficiency and will have a significant bearing on the success or failure of mobility initiatives. In its overview of the Australian fishing industry, Ridge Partners included a SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis of the industry's operating environment and plausible future scenarios for seafood industry sectors were examined. Some of the results are clearly relevant to mobility planning and execution:

- *"Wide geographic spread creates many issues, stretches resources and reduces communication and collaboration;*
- *low profitability of fishers compounds their lack of awareness and poor community engagement;*
- *few commercial fisheries have the scale, free profits or leadership capacity to reinvest in joint operational efficiencies"* (Ridge Partners, 2010).

For the wild catch sector, under the base case scenario, Ridge Partners identified human capacity as a *key risk area*. In contrast, the same section for the aquaculture sector base case scenario suggests *Aquaculture's growth attracts new investors, new employees, and indigenous people* (Ridge Partners, 2010). Despite these risks there are some industry leaders that well recognise the critical importance of developing the skills, motivation, and commitment of the people working in their businesses.

> *"In the last few years I've really noticed that the success of my company is solely in the hands of the people that are working for me. I can't stress that strongly enough".*
>
> David Guillot, trawl fisherman, Lakes Entrance.

Nonetheless, for aquaculture too there is evidence of a lack of awareness of the importance of training and development, including at times low commitment to training (McShane, 2004). For an exchange program to be both effective and efficient, employers and employees must be well aware of the respective benefits and value the longer term outcomes. A contemporary training and development mindset would enable both the shorter term benefits of an exchange program (alleviation of skills shortages, seasonal transfer of labour, skills transfer from within the seafood industry or from the primary industries more broadly); and underpin valuable longer term outcomes.

Additional factors

Internet Use and Availability

Use of the internet to support an exchange program, including as a portal to enable access to other employment services and opportunities is likely to be an important issue. There is broad recognition and acceptance of the need to improve internet access and capability away from primary population centres. Many of the seasonal employment opportunities in the fishing and aquaculture sector exist in these regional areas where internet availability is significantly more limited, and/or less reliable.

Primary limitations include limited web access within workplaces; too few internet enabled computers within workplaces; complete absence of internet connected computers within workplaces; and/or operational circumstances not suited to computer use. Low reliability with internet connections and associated hardware (poor bandwidth, connectivity issues, out of date hardware and software, virus related issues); and limited computer operating skills or reliable access to IT experts or skilled computer users may all undermine the effectiveness of this important medium (Herrington, 2006).

The provision of appropriate and up to date computer hardware and software, and if possible reliable and cost effective broadband access is likely to be a worthwhile investment for employers, particularly those in less well served rural communities.

Empowerment, capacity building, and extension

Whilst part of a broader capacity building objective for all sectors of the industry, the need to empower employees, and even more casual or seasonal workers, and build their interest in and commitment to the seafood industry, remains very relevant to an exchange program. Key empowerment skills or capabilities can be summarised as:

- Critical thinking
- Planning
- Communication
- Facilitation
- Community cooperation/networks, and
- Leadership

Just the presence of these capabilities will not deliver empowerment and its subsequent benefits. Rather it's the level of skill and judgement with which the capabilities have been applied (Roberts, 2007).

FRDC's draft 2010 national fishing and aquaculture RD& E strategy promotes the concept and practice of national level research, regional adaptive development, and local extension. The approach offers a powerful platform for efficient and effective fisheries related RD&E. Industry empowerment is a key element of this approach and is also being enabled through a range of related R&D initiatives and FRDC projects. The draft FRDC Strategy describes the role of local extension, of the type embodied in contemporary mobility programs, as follows:

> *"Local Extension (E) facilitates empowerment through systematic and participatory transfer of knowledge and skills to bring about positive change in behaviours and/or attitudes. In the context of fishing and aquaculture, target groups include fisheries management, government agencies, catching sectors, aquaculture producers and the broader community"* (FRDC, 2010).

Benefits and Adoption

Benefits

There are two fundamental benefits to improved workforce mobility in the seafood industry. The first benefit is realized by moving valuable workforce capability to areas of need; the second is building existing capability through improved knowledge and skills development arising from a mobility placement.

The direct stakeholder benefits from this project will depend partly on the level of adoption and whether or not activities and initiatives recommended for future implementation go ahead. If there is no further development of the exchange concept, and no additional extension outside of that envisaged by the original project proposal, there will still be substantial value from the project for FRDC's people development program, some sectors of industry, and some broader stakeholders.

The project proposal stated the ultimate aim of the project as *build the industry's social capital and optimize the use of the labour pool, both of which will contribute to the long term sustainability of Australian seafood industry, by building its adaptive capacity*. This broad objective captures the more strategic value that may be captured from the project if there is additional work to properly design and then enable a national exchange program.

The initial proposal suggested a flow of benefits (100%) to the commercial fishing and aquaculture sectors in approximate proportion to the level of commercial activity for each Australian jurisdiction. The Fisheries that were identified as beneficiaries (on the basis of their initial expressions of support for an exchange program) were:

WA - Western Rock Lobster Fishery
SA - Marine Scalefish Fishery
WA - Exmouth Gulf Prawn Fishery
QLD - East Coast Inshore Finfish Fishery
VIC - Bay and Inlet Fishery
NSW - Estuary Prawn Trawl Fishery
Commonwealth - Northern Prawn Fishery
NSW - Ocean Trawl
SA - Prawn Trawl Fishery
QLD - East Coast Otter Trawl Fishery

More specifically, those industry members and enterprises (primarily aquaculture based) that are already running some form of knowledge or skill based mobility program will find the project valuable if it helps them to improve the design and focus of their existing activities. By drawing out the connections between existing industry skills and learning priorities, and articulating the benefits of these in the context of mobility programs, and industry productivity, the results should be of broad benefit to all stakeholders engaged in fishing or aquaculture production activities.

The seasonal map has already proven its value in summarizing disparate information about seasonal work requirements in the seafood industry. It was well received at the Port Lincoln Jobs and Skills Expo and several key stakeholder groups including fishers, job placement agencies, and government agencies (DEEWR and DAFF) have asked that it be provided to them to enable efficiencies in matching employers and prospective workers.

Adoption

There are a range of project recommendations and issues identified for further development which will be part of the adoption pathways and improve the dissemination of results. One of these is that there be further work to design a national level seafood industry exchange program, including more definition of the benefits and costs likely to accrue to various industry sectors.

The project findings suggest that despite some real life barriers to a future exchange program there remains significant potential value for such an initiative at a time of obvious need for improved workforce efficiency. Whether this sort of program is seen as a priority by members of the wild catch and/or aquaculture sector will be the primary determinant of future adoption.

More immediate extension opportunities have also been identified and are captured in the project recommendations. In brief, the seasonal map should be refined to the point where it can be posted as an interactive resource on a suitable webpage hosted by either FRDC, or one of the major primary industry focused labour force mobility initiatives (National Job Network, Tourism Australia). This should then be linked to fishing and aquaculture peak bodies via their websites to encourage some ownership by them and initiate some capacity building with respect to increased mobility and efficiency gains.

Further Development & Recommendations

Recommendations

The project has identified a range of issues that were unable to be further evaluated with limited scope and resources. Some of these are clearly relevant to the further development of a national seafood industry exchange program, or to further evaluate the *value proposition* of such a program.

Recommendations directed at any one sector/agency/group should be considered in the context of other, and potentially competing, priorities for those groups. Further definition may be required to place these recommendations in the context of those broader sectoral priorities.

Unless the recommendations are considered by stakeholders, prioritized according to their imperatives, and then appropriately resourced, it is highly likely that the potential value from some aspects of this project won't be realized.

Lead	Recommendation	Priority
FRDC	FRDC's People Development Program be recognized as the lead group to oversee prioritization of recommendations and issues for further development. Once the priority recommendations are agreed by the steering committee and PDP, the PDP oversee (with assistance from the project steering committee) development of an implementation plan for the agreed priority recommendations - including identification of appropriate funding sources.	High
FRDC	FRDC's People Development Program consider establishing a grass roots bursary program to facilitate business to business exchanges in the wild catch and aquaculture sectors.	Medium
FRDC	FRDC's PDP commission a feasibility study, including an appropriate level of cost/benefit analysis, to inform development of a national fisheries and aquaculture staff-based exchange program. The study should build on this report, particularly with respect to the value proposition and real life implementation prospects of such a program.	Medium
FRDC	FRDC's social science program commence a longitudinal study about the benefits of exchange programs in relation to better productivity through innovation and improved knowledge management.	Medium
FRDC &	FRDC and industry collaborate to provide a website (or suitable web-page on an existing site) that can	Medium

Industry	illustrate backpacker, seasonal work, or exchange opportunities in the Australian seafood industry. This website should include the project's seasonal work map.	
Industry	The Australian seafood industry should develop knowledge management and people development plans as part of industry's innovation/RDE/knowledge management planning. As part of this industry should consider setting explicit mobility targets and sustainable funding model with a 5-7 year investment horizon,	High
Industry	Use existing seafood industry community networks to build a host organization to champion knowledge management strategies and capacity building (for example, WINSC National seafood Industry leadership Program Alumni, or 3M mentor bank).	Medium
Industry	Nationally, the seafood industry would benefit from better integration with seasonal worker labour markets and initiatives to place workers in seasonal employment (e.g. utilise web based social networking like Tourism Australia's Australian working holiday facebook site.	Medium
Industry	Industry associations refer their members to advice on recruiting seasonal, back packer workers, or older workers (grey nomads) for example, to Rural skills Australia.	High
WAFIC/ACG	The WA fishing Industry IDU project 07/05 Seafood Grants Website should include a mobility/professional development programs category.	Medium
Industry or Government	Industry (or Govt) should provide information to the National Job network's annual publication *National Harvest Guide* regarding seasonal work opportunities.	High
PI	Extension of the seasonal map to key project stakeholders should be initiated as soon as possible once the project final report has been accepted.	High
Industry & Government	Any future exchange programs be integrated with broader industry training programs and national level primary industry focused skills development and knowledge management priorities; and learn from the wealth of information available on rural industry workforce development and skills transfer initiatives.	Medium
ACG (Dan Machin)	Dan Machin arrange to meet with Mr Gavin Burnell from the European Union's Aquaculture Technology Transfer program (Aqua TT) during Mr Burnell's visit to WA in June or July 2010 to build on project findings where appropriate.	High

Planned Outcomes

Planned outcomes from the project were identified in the initial proposal as:

- a scoping study on the feasibility of a fisher exchange program with the results of the study to be circulated to national peak bodies, Seafood experience Australia, the FRDC and CRC for Seafood. Where appropriate the project outcomes were to be presented at a National seafood industry conference or video cast.
- Development of a national fishing and aquaculture seasonal map, to assist in identifying areas of employment need and available labour.
- The provision of information to design a seafood industry human capital mobility program that could enable the removal of barriers to mobility and drive improved labour force participation in the seafood industry.

The primary outcome expected from the project was development of the seafood industry's social capital, more efficient use of the existing industry skills and personnel base, and ultimately a positive contribution to the long term sustainability and profitability of Australia's seafood industry, by building its adaptive capacity and resilience to change.

In most respects this is a longer term outcome which will require input from a broad range of human resource and business performance strategies and tools. There is little doubt that improved knowledge and skills transfer within the seafood industry will make a major contribution to its long term performance. This project has also demonstrated that improved mobility and the benefits from that can also make a valuable contribution.

Specific outcomes attributable to the project over time, or derived from a future national exchange program, should be defined and measured as part of a performance evaluation framework for any future program.

Conclusion

The initial project proposal demonstrated the clear need for increased seafood industry mobility. The results from this project have affirmed that need and placed it more clearly in the context of the challenges and constraints for industry. The general learning preferences for the industry are recognized to fit more in the hands on and practical realm and this fits well with an experiential exchange program that connects industry people and enterprises.

Despite the current and future labour force constraints, the seafood industry has a national pool of semi skilled and skilled workers. On balance this workforce is clearly less mobile than some other primary industry sectors and this is undermining productivity and profits. It also reduces the opportunity for a range of industry people to harness the benefits of networks, hands on learning, and greater efficiency, satisfaction, and professional recognition in their jobs.

There are a range of examples where industry has taken the initiative and is seeing the benefits of organised skills and knowledge transfer initiatives. Within the aquaculture sector there are active business to business exchange programs in place. For the wild catch sector, particularly at a regional scale, there are good examples of organic exchanges between fishing businesses, and one off liaison and skills development visits across fisheries.

The project has identified critical success factors to improve mobility. Many of these are relevant to initiatives at any scale and some will be immediately useful to businesses already engaged in exchanges of one form or another. There is a paucity of information about the design and application of exchange programs in both a domestic and international context. Well designed Australian seafood industry initiatives can offer rapid domestic benefits, and also inform the state of knowledge about these issues at a global scale.

There are also fundamental human capacity elements that provide the foundations for effective skills and knowledge transfer programs, and mobility initiatives more broadly. For the seafood industry, with tight profit margins and a complex regulatory and operating environment, best practice in organizational culture will enhance learning and innovation. These are core skills for effective enterprises and can, in part, be enabled by mobilizing mobility. Best practice organizational culture will also drive staff empowerment, business productivity and then sustainable profitability across seafood industry sectors.

Findings from the project reinforce the initial concept that there is a need for improved workforce mobility in the seafood industry. This is particularly so for the wild catch sector which faces serious workforce challenges in the immediate and near term. There is little doubt that a cost effective and efficient workforce exchange program could be set up for the aquaculture and wild catch industries however initial implementation and ongoing success will require genuine commitment from industry leaders.

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Appendix 1 – Seasonal Map of Aquaculture Production[8]

Australian Aquaculture Sectors				
Species	**Primary Location**	**GVP $'000[9]**	**Peak Season**	**Comments**
Queensland				
Prawns	Cairns, Gold Coast hinterland, Mackay	$42.5 million	Oct - May	Stocking from October, labour intensive through rearing, feeding etc. Harvest April, May. One year round operation doing banana prawns vicinity of Cairns.
Barramundi		$18.5 million		
Other - incl eels and aquarium species		$5 million		
New South Wales				
Oysters		$36.4 million		
Silver Perch		$2.4 million		
Victoria				
Freshwater Eels		$2.1 million		
Salmonids		$6.9 million		
Abalone		$4.3 million		
Blue Mussels	Flinders, Clifton Springs, Grassy Point	$2.3 million		
Tasmania				

[8] Missing details to be completed before finalisation of the project report.
[9] Source: ABARE Fisheries Statistics 2007

Salmonid marine farming	D'Entrecasteaux Channel, Tasman Peninsula, Strahan	$290 million	Year round production cycle	Peaks in demand for product November to Christmas, and February to Easter
Pacific Oyster marine farming	St Helens, Smithton, Cambridge, Cremorne	$19 million	Year round production cycle	
Abalone marine farming	Bicheno, Dunalley, Stanley, Clarence Point	$5.8 million	Year round production cycle	
Mussels		$2.3 million		
South Australia				
Southern Bluefin Tuna	Port Lincoln	$ 137.6 million	Apr-August	Value attributed to grow out of wild caught SBT in sea cages
Oysters	Coffin Bay	$ 37.8 million		
Other - incl Kingfish, Snapper	Arno Bay	$18.5 million		
Abalone		$7.1 million		
Barramundi		$3.7 million		
Western Australia				
Pearl Oyster managed Fishery, *Pinctada maxima* (Dept of Fisheries, WA)	• Broome • Exmouth • Karratha • Carnarvon	$113 million	Farming ongoing all year Peak harvest (Jan – July) Seeding (July – Sept)	• 8 vessels in 2006, 3 vessels in 2008. The number of vessels in the fishing fleet has been slowly reducing due to increased fleet efficiency and increased reliance on hatchery-produced shells. Each vessel has approx 10-14 crew involved in the fishing of pearl oysters between March and June each year.
Mollusc aquaculture (Dept of Fisheries, WA)	Production areas; • Cockburn Sound • South Coast • Albany harbour	$2 million	Farming ongoing all year Green lip abalone, mussels and western rock oysters	There are 17 licenses. The mussel industry directly employs 40-50 people.

Finfish aquaculture (marine and land based)	State wide	$4.3 million	Farming ongoing all year - barramundi, brown trout, rainbow trout, silver perch, mulloway and yellowtail kingfish	28 licenses
Freshwater crustacean aquaculture	South West WA	$2.7 million	Farming ongoing all year – marron and yabbies	Employs approximately 180-190 people
Northern Territory				
Pearl Oysters		$17.6 million		

Appendix 2 – Seasonal Map of Wild Catch Fisheries

Australian Wild Capture Fisheries				
Fishery name	**Location/Ports**	**GVP $'000[10]**	**Peak Season**	**Comments**
Commonwealth Jurisdiction				
Northern Prawn	Darwin, Cairns, Kurumba	62,271	Banana: Apr-May Tiger: August November	Good candidate fishery for Exchanges
Torres Strait Prawn	Cairns, Innisfail	11,327	Banana: Apr-May Tiger: August November	
Torres Rock Lobster	Cairns	9,630	Closure in December	Tropical Rock Lobster Dive Fishery (similar to QLD east coast TRL)
SESSF Trawl	Eden, Lakes Entrance	26,141	All Year	Candidate along with similar demersal trawl fisheries (i.e. NSW, QLD, WA)
SESSF Gillnet, Hook and Trap Sector	Eden, Lakes Entrance	23,500	All Year	Gillnet targets Gummy Shark, Hook and Trap primarily Blue Eye Trevalla and Pink Ling
SESSF GAB Trawl - Flathead & B Redfish	Port Lincoln	10,160	All Year	Demersal trawl with increasingly well developed co-management arrangements
Eastern Tuna & Billfish	Mooloolaba, Coffs Hbr, Sydney	32,601	All Year	Only major Australian pelagic longline fishery
Sothern Bluefin Tuna	Port Lincoln	40,975	Jan - March	Catch purse seine based - very specific operating environment
HIMI (Sub Antarctic)	Fremantle WA	Approx 25,000[11]		Demersal longline, trawl and trap fishery. Extended trips and severe operating conditions.
Queensland				

[10] Source: ABARE Fisheries Statistics 2007
[11] Detailed catch and value not available due to confidentiality. Estimate based on TAC and approx beach price of P Toothfish.

QLD East Coast Trawl Fishery		$110 million		Demersal trawl. Prawns, scallops, stout whiting and mixed by-product (bugs, cuttlefish)
Reef Line		$34,700		Predominantly Coral Trout, then red throat emperor
East Coast Inshore finfish		$24,000		Northern sector - threadfin, barramundi, Grey mackerel via mesh nets Southern sector - mullet, tailor, bream, whiting flathead, mulloway via haul nets
GoC inshore finfish		$12,000		Grunter, threadfin salmon, barramundi, school mackerel via mesh nets
Mud crab	Moreton Bay, Gladstone, Princess Charlotte Bay	$ 9,400	Dec - June	
Tropical Rock Lobster	Cape York to Cape Melville	$ 7,800	Closed 1 Oct - 31 Jan	Hand collection dive fishery. Live export
Spanner Crab		$ 5,600	All year. Closed 20 Nov - 20 Dec	Dillies offshore. Exported live.
Blue Swimmer Crab	Moreton Bay, Hervey Bay	$ 5,800	Nov - May	Mainly sold domestically (QLD)
East Coast Beche de Mer		$ 6,500		Hand collection dive fishery. Processed for export.
New South Wales				
NSW Ocean Prawn Trawl Fishery	Tweed Heads, Evans Heads, Iluka, Coffs Hbr,	$32,000	All year	Demersal prawn and fish trawl - predominantly King and School Prawns. By-product including Whiting, Bugs, Squid, Cuttlefish, Octopus
Ocean Haul		$14,000		Beach Haul and Purse Seine - mainly sea mullet, Australian Salmon, Luderick, Bream. Some bait - sardines, blue mackerel.
Eastern Rock Lobster		$5,200		Inshore beehive pot fishery, larger square traps offshore

Abalone	Primarily Southern NSW Jervis Bay to Eden	$5,000	All year	Hand collection dive fishery
Victoria				
Vic Rock Lobster	Portland, Port Fairy, Apollo Bay, Queenscliff, Lakes Entrance	$15,000	Most fishing from mid Nov - Mar. Various closures Jun to mid Nov.	Pot Fishery. Live export to Asia.
Abalone	Portland, Port Fairy, Apollo Bay, Lakes Entrance, Mallacoota	$29,000		Dive Fishery
Bay and Inlet Fisheries	Port Phillip Bay, Corner Inlet, Gippsland Lakes	$7,000		Primarily haul seine nets, gillnets, purse seine nets
Tasmania				
Abalone	Hobart, Margate, Dover, Beauty Point	$88,000	Quota managed fishery with harvesting occurring year round	Diving off small boats launched close to fishing grounds. Mother vessels used to support 3–4 divers and dinghies in more remote areas.
Southern Rock Lobster	Hobart, Dover, Strahan, Stanley, Bridport, St Helens, Triabunna	$58,000	Closed season during October	
Scallop		$7,600		Rotational harvesting arrangements. Low levels of fishing some seasons.
South Australia				
SA Prawn Fishery (3 zones)	Venus Bay, Ceduna, Coffin Bay, Port Lincoln, Wallaroo, Port Pirie, Port Adelaide	$35,900	December to June	Mining sector primary competition for crews. Trend may change due to recent economic factors (higher Aus dollar), and because of mining activity slowing down.
SA Marine Scale fish	Whole SA State	$18,500	All year	Owner operator provisions apply.
SA Sardines	Port Lincoln	$16,300	All year (peak Jan to May)	Purse seine fishery

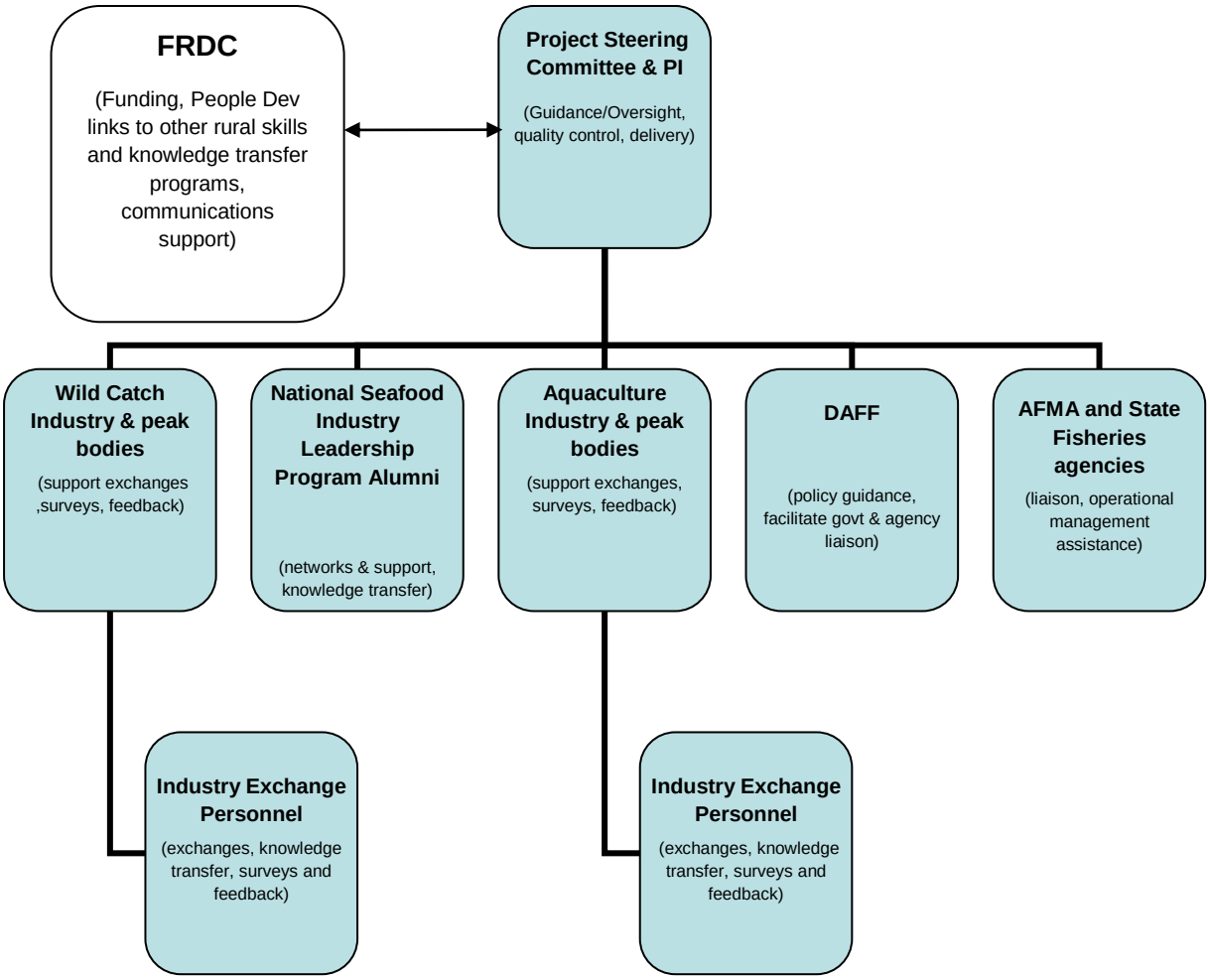
Charter Fishery	Primary SA ports	$4,000[12]	All year – primarily summer months	
SA Northern Zone Rock Lobster Fishery	Port Lincoln, Kingscote, Yorke Peninsula	$18,000	November to May inclusive	Mining sector main competition for crews however trend may change due to improved fishery profits and mining activity slowing down.
SA Southern Zone Rock Lobster Fishery	Cape Jaffa, Robe, Beachport, Southend, Port Macdonnell	$80,000	October to May inclusive	The Southern Zone is more profitable than the Northern Zone and so crew retention less of an issue.
South Australian Abalone Fishery	Port Lincoln, Elliston, Streaky Bay, Port MacDonnell, Blackfellows Caves, Port Hughes, Kangaroo Island,	$31,000	All year, most catch in early summer in response to Chinese market.	Majority of product is canned.
Lakes and Coorong Fishery	Goolwa and Meningie	$7,500	Spring/summer	Most fishing (partic Mulloway and pipi) during spring and summer
Blue Crab Fishery	Port Broughton, Port Adelaide	$5,700	July/August (Spencer Gulf) February/March (Gulf St Vincent)	Small crews. Mining sector has attracted workers away from fishing. Some licence holders offering more reliable and flexible working conditions to attract and retain workers.
Western Australia				
West Coast Rock Lobster Fishery	Operations occur between Shark Bay and Cape Leeuwin - Kalbarri, Geraldton Dongara, Jurien Bay Fremantle, Mandurah	$244,500	Operates November 15 – June 30. The peak months are December to Mid March.	396 commercial boats, crew generally engaged for a season.

[12] Approximate - estimate based on internet research

West Coast Demersal Scale fish Fishery	Kalbarri, Geraldton, Busselton	$6,000	All year - peak months are: Feb – June, Oct - Dec	Recent management changes are likely to reduce the number of boats operating to around 25-30. Crew are generally engaged for a season.
Shark Bay Prawn Fishery	Denham Carnarvon	$16,900	Operates March – October. Peak months are April - July	27 boats are licensed but as a result of changes to gear configuration, 18 boats operating in 2009. Crew increase during peak months
Exmouth Gulf Prawn Fishery	Exmouth	$9,000	Operates April – November. Peak months are April - June	16 boats licensed, 9 boats are operating in 2009.
Pilbara Demersal Finfish Fishery, incorporating trawl, trap and line fishing methods	Onslow Exmouth Port Samson	$10,500	Operates all year. Peak market periods April and December	11 trawl licences with varying time allocations throughout the various areas, with the allocation being used by the equivalent of 4 full-time vessels. 9 line permits used by the equivalent of 4-5 full time boats 6 licences run by 2 boats in the trap fishery.
Greenlip, Brownlip Abalone Fishery	Southwest and south coasts, Busselton to the SA border.	$11,000	Year Round	14 vessels operating in the greenlip/brownlip fishery, employing approximately 35 divers and deckhands.
Abrolhos Islands and Mid West Trawl Fishery and Shark Bay Scallop Fishery	Geraldton Carnarvon	fluctuates $4,000 - 28,000	Abrolhos Island season April to June. Shark Bay between February and October peaking in March/April.	Same fleet operates in both fisheries. The two fisheries employ around 130 people directly and use large crews of up to 13 per boat to process at sea - more recently limited to 10 crew. Effort varies greatly across years.
Demersal Gillnet and Longline Fisheries	Geraldton Fremantle	$6,400	Feb – June Oct - Dec	21 active vessels in Southern Demersal Gillnet and Demersal Longline Fishery in 2005/2006. 10 active vessels in the West Coast Demersal Gillnet and Demersal Longline Fishery.

Northern Demersal Scalefish managed Fishery	Broome Derby Darwin	$5,200	May operate all year but number of fishing days determined annually by WA DoF	Seven vessels with an average of three crew per vessel fished during the 2007 season.
Northern Territory				
Mud Crab	Primarily Gulf of Carpentaria	$6,400		Primary markets are for live crabs to Melbourne and Sydney Markets
Barramundi	Van Diemen Gulf and various bays	$5,100		Gillnets

Appendix 3 – Project key Stakeholders and Functional Relationships



Appendix 5 - FRDC & CRC mobility programs

Project Reference	Title/Description	Number of People
N/A	2007 National Seafood Industry Leadership Program	1
2007/707	Washington Education Research Association (WERA) 099 and National Shellfish Conference, Rhode Island	2
2008/724	European Seafood Exposition 2008 - Brussels, Belgium	2
2008/730	Codex Alimentarius Working Group on Pathogenic Marine Vibrio spp	1
2008/782	European Commission and Australian Embassy - Brussels, IFREMER and the 7th International Conference on Molluscan Shellfish Safety	1
2008/728	2008 National Seafood Industry Leadership Program	3
2008/783	Study Tour Based at the National Institute of Water and Atmospheric Research	2
2008/784	National Shellfish Conference, Whiskey Creek Hatchery, Taylors Shellfish, Hatfield Marine Science Centre and Aqua Technics	1
2009/705	2009 National Seafood Industry Leadership Program	2 Industry 1 Researcher
2009/719	Amoebic Gill Disease Research in the United Kingdom	1
2009/720	Finfish Hatchery Research at the University of Patras, Visits to Mediterranean Marine Fish Hatcheries and Attendance at Larvi 2009 and LARVANET	2

Appendix 6 – Summary of Training and Skills Needs – Wild Catch Sector

The Queensland rural skills and training demand report for 2009 reports a summary of training and skills needs for the wild catch sector (reproduced below)[13]

The benefits of training	- better motivated employees - higher quality product - increased production - better teamwork
Preferred learning methods and training providers	- informal gatherings with others in the industry - attending an industry conference - face-to-face in a small group with a facilitator
Importance of a qualification	- Eighty-three per cent indicated that gaining a qualification was very or quite important
Marketing skills in demand	- packaging and labelling product - developing a brand - investigating the market - calculating cost of production
Financial management skills	- Universally acknowledged with no particular skills identified
People management skills	- building team spirit - building effective communication within the business - motivating people - dealing with conflict in the workplace - leading a team -
Business planning	- Training is needed to help identify future opportunities for the business
Leadership	- Fishers want training in writing grant applications
Information technology	- using Microsoft Project to manage projects - using spreadsheets to manage data - using a financial package such as MYOB or QuickBooks
Workplace health and safety and other compliance issues	- quality assurance - food safety and HAACP - first aid
Sustainability, climate change and environmental management	- carbon trading - energy use and management - biodiversity management
Industry-specific skills	- Managers: handling the catch; preparing the catch for market; species identification. - Skippers: handling the catch; species identification; ropes, splices, winches and basic equipment handling. - Deckhands: basic seamanship; ropes, splices, winches and basic equipment handling; species identification

[13] Based on responses to the projects online survey of primary industry sectors. Six fishers responded encompassing single person operations to a large fishing company with up to 50 permanent employees across catching sectors.

Appendix 7 – Exchange Planning Overview & Guidelines[14]

Why participate in an exchange?

For employers the relative costs and benefits of participating will vary. Some benefits are more strategic. The more obvious pros and cons are detailed below. In general there are small downsize risks and a relatively larger benefit from participation. These are described further below:

Employer - Benefits	**Employer - Costs**
Improved labour force access, networks	Some administrative time, minor lost productivity as long as exchange staff well matched and expectations clear
Exchange of ideas, skills, practices	Minor potential to lose staff if host employment is considered more suitable, better conditions etc
Leading and participating in development of solutions to a critical industry issue	Some risks associated with short term engagement of temporary staff (OH&S, team dynamics etc) though generally manageable.
Recognition/standing as a leading and proactive member of the seafood/aquaculture industry	
Exposure to FRDC and others as an engaged and proactive company (Seafood Directions, FRDC Fish Magazine, Project Report)	
Exchange staff - Benefits	**Exchange Staff - Costs**
Exposure to new industry sectors, learning, experience. Positive contribution to CV.	Working in unfamiliar circumstances, conditions
Demonstrating flexibility and willingness to learn to employers. Seen to be part of developing solutions to company problems.	Uncertainty re pay and conditions relative to their normal job
Largely cost neutral opportunity to try something new for 4-6 weeks or so.	Possible OH&S risks if an unfamiliar environment

How will the exchanges take place?

1. Cobalt and the two employer companies (prob GM/HR Managers) discuss and agree nature of work, duration, pay and conditions[15], objectives for each employer, accommodation arrangements, risk management approach. This is reflected in an Exchange Agreement drafted by Cobalt with assistance from each employer.

[14] These guidelines were prepared to brief potential exchange participant enterprises and guide exchange placements. They were sent to a small number of prospective exchange hosts/providers during the project.

[15] Strong preference is to set pay and conditions for the exchange staff at the same level as the staff they are temporarily replacing. Otherwise as negotiated and agreed by employers and exchange staff.

2. Exchange Agreement discussed by employer and staff member proposed for exchange.
3. Exchange staff, employers and Cobalt all sign the final Exchange Agreement.
4. Employers work with exchange staff to arrange reasonable accommodation at least cost (billeting preferred, must be close to work location)
5. Cobalt to arrange and pay (using project funds) for initial exchange staff travel to accommodation, and travel home from accommodation on completion of the exchange.
6. Cobalt will liaise with employers to conduct a pre-exchange interview with staff and each employer (Telephone or face to face). Interview focused on determining:
    - Actual and perceived initial barriers to labour mobility from all participant perspectives ; expectations of exchange staff and employers.
7. Cobalt will liaise with employers to conduct a mid-exchange interview with staff and each employer (Telephone or face to face). Any important feedback for employers to be provided immediately. Interviews will be focused on:
    - Mid exchange feedback on major issues, provide independent support to participants, identify actual/perceived barriers to future exchanges, identify key success factors from all participants perspectives.
8. Cobalt will liaise with employers to conduct a post-exchange interview with staff and each employer (preferably face to face and at the most cost effective location). Any necessary feedback to employers provided immediately. Interviews will be focused on:
    - Objectives as above (i.e. exit interview) feedback based on experiences and impressions of the exchange and related processes.
9. Cobalt will arrange and pay (using project funds) for return travel from place of work to exchange staff's usual residence.

Employers and exchange staff provided with a draft report on each exchange for comment and before the exchange outcomes are included in the project's draft final report. Employers will be provided with a copy of the draft report for comment before it is finalized and submitted to FRDC.

Appendix 8 – Summary of Interviews and Stakeholder Liaison

In the absence of actual workplace exchanges, the evidence collection process was revised to include a series of interviews of employers, managers, and employees from both wild catch fishing and aquaculture businesses. Several representatives from peak seafood industry and aquaculture bodies were also interviewed.

Information to inform the project findings was also collected from a range of seafood industry stakeholders throughout the project. Much of this took place whilst attempting to identify suitable exchange opportunities, and during development of the seasonal map of fishing and aquaculture operations.

Whilst the sample size for interviews was small, they were targeted at individuals known to possess a strong understanding and appreciation of the issues relevant to an exchange program, as well as the immediate operational and more strategic needs of businesses within the seafood industry. The limited resources available for the project, particularly in the latter stages when it was accepted that exchanges would not be possible in the time remaining, limited the ability to sample more industry representatives and other stakeholders.

To mitigate the potential for the small sample sizes and limited resources of the project to undermine the credibility of the results there has been a focus on cross validation of the information and evidence collected through analysis of feedback from industry contacts during exchange planning liaison, the results of the targeted interview process, and the literature review findings.

Table 11: summary of findings from interviews and stakeholder consultation

Questions/Issues	Majority opinions and key issues	Notes
Would an exchange program be an effective way to enable the transfer of workplace skills or knowledge?	• It would play an important part in improving: - business productivity, - key staff retention, and - frontline staff networks • May be useful when staff from one enterprise are no longer required/laid off to facilitate relocation and look after staff within an industry sector. • May work although may attract the more itinerant workers rather than experienced/skilled workers. Other sectors like shearing are mobile so it may also be a case of education the workforce and changing expectations about mobility. <u>Wild Catch</u> • Generational gap in the wild catch industry, observations that younger /new crews are reluctant to learn from older workers with extensive experience and skills. • Less valuable for well run and contemporary companies with good workplace culture in place. They have less trouble retaining workers.	Researcher –industry exchanges will be important to build a pool of business minded applied researchers. Inter business exchanges are difficult to undertake in sectors where there is competition. In such sectors, Inter-sectoral or International exchanges or study tours, within the same sector would likely be the only mobility option.
Current skills and knowledge being exchanged	The companies that currently undertake inter-business exchanges focus staff exchanges on the following knowledge management areas: - bench marking/work force productivity - feed and feed management - harvest techniques - equipment use and maintenance - stock production planning; inventory management - labour exchange. - Interpersonal skills and experience with workplace dynamics Within regions with a concentration of aquaculture ventures there is often significant transfer from one employer to another in the normal course of career progression and finding a preferred job/employer. This contributes to substantial and valuable knowledge transfer and capacity building within the sector.	All aquaculture interviewees expressed interest in developing management soft skills – frontline or essentials for management training for their frontline staff.

Would an exchange program be an effective way to alleviate labour and skill shortages?	<u>Aquaculture</u> • The program would be useful in improving staff retention, by improving job attractiveness and career development pathways. • It may also reduce the transactional cost of locating new staff directly from new graduate pool from either TAFE's or universities. • For WA the Gorgon LNG development will place critical stress on fishing and aquaculture businesses for crew/labour availability. • Concerns that staff may not return to their initial employer (i.e. poaching). • In some sectors fruit pickers are interchanging with aquaculture farms from season to season so exchanges may not be confined just to the fishing and aquaculture industry. • Some locations (i.e. Cairns, Townsville) are attractive to tourists like backpackers and grey nomads who are also working on aquaculture farms so may be specifically targeted for exchanges/jobs. <u>Wild Catch</u> • It could be useful; however, the windows of opportunity for staff exchanges are small. It is possible that integrating into harvest trails, backpacker and seasonal worker networks may be a better option to provide a labour source. Backpackers are a preferred source of new crew in many areas. • Less of an issue after GFC slowdown but definitely a strategic issue for resolution. More of an issue for wild catch sector. Will be important for industry to be positioned to deal with workforce shortages once the mining sector/economy gets cracking again. • Highest demand is for first mates/leading hands, skippers. Some companies source all of their engineers from 457 visa program. • Crew with any sea going experience are valuable. Need crews that are not surprised by conditions at sea and hard work. • Crew coming in on an exchange may not be efficient, pull their weight and crew profit share issues to be resolved. • Could be valuable within the seafood processing sector as well – major shortages. • After the Commonwealth fisheries buyout experienced crews were lost to other sectors because there was no efficient way for them to redeploy to other fishing operations. • Range of initiatives completed or underway to improve indigenous engagement in the aquaculture sector. Exchanges could be a good way to get the experience needed to get established after initial training.	

	• Job placement agencies need to be aware of the seasonal opportunities and exchange opportunities as there's an established and well resourced framework in place to get people into jobs. • Skilling up existing proven workers is a priority and could be part of the exchange approach. • With shorter seasons and reduced catches profitability is under pressure. Crews need to be efficient at mending nets and other tasks. Some older workers have these skills but aren't being used. • Need to maintain a core group of experience and proficiency - for a deck crew of 3 suggestion of one experienced, one OK, and one brand new - as a minimum.	
What exchange programs are currently available?	The following programs were identified: - their own internal business to business exchanges - Rotary exchanges • Whilst not an exchange program the 457 visa system is widely used by the wild catch sector and generally well regarded although recent changes to the framework are problematic i.e. language issues. • In some areas there is a lot of organic exchange between fishing sectors' and companies. In Port Lincoln the rock lobster season finished early so crews were moving on to pilchard boats or into the tuna season – facilitated by word of mouth/networks and reasonably efficient.	
Which sub-sectors would benefit from such an exchange program?	• Frontline staff for both wild catch and aquaculture • Fish processors • Remote and regional based businesses • If it develops multi skilling would be valuable – particularly for smaller aquaculture farms and fishing operations	
What are the barriers to work force mobility?	• The following barriers were identified: • transaction cost, for example, cost of locating and administering a grant • multiple layers of bureaucracy within tiers of government including regulatory barriers and impediments to growth of the aquaculture sector • some reluctance for people to come into the aquaculture industry due to lack of confidence about the future and approvals for new farms, expansions • high cost of moving, especially in regional and remote locations; tyranny of distance an issue for WA based crews • intra-sector competition can limit the scope for within industry exchanges • absence of a learning culture with some businesses	

	• availability of accommodation in regional or remote locations is a critical issue; budget accommodation isn't budget anymore in many regional and rural locations; backpackers are often more self sufficient (i.e. stay in own vans, tents) • possession of driving licences is a major issue for young workers; increasingly onerous conditions before getting a licence in some areas • low levels of literacy and numeracy are major constraints with increasing multi skilling and technology use • many people are very reluctant to move away from their friends, family, networks for minimal financial gain • some employers are reluctant to take on older workers that have extensive experience and are still physically fit for work • a substantial number of employees don't have the desire/drive to increase their skills and seek further responsibility, or sometimes the aptitude • many employees are looking for more and more work/life balance and that's hard to provide in some sectors of fishing and aquaculture • industry needs a national deckies ticket to ensure consistency in worker training/skills • fishing industry is just the training ground and then workers go on and get jobs in the mining industry • smaller companies have limited opportunities to offer exchange candidates and are generally very focussed on multi skilling • generational issues with work ethics; many of the younger workers are just not prepared to work as hard as they used to • people are not prepared to go out of their comfort zone • employment awards are a significant barrier to employers; after hours work is standard in aquaculture and wild catch sectors	
What are possible solutions to improve mobility?	• Standardised and recognised training nationally. • A collective industry/employer commitment to on the job training so that mobile workers are not disadvantaged with training provision. • A national commitment to practical skills development.	
What costs would industry contribute?	Recipient • time from their substantive position • salary or wages • Insurance cover • administration of exchange agreement Host	**Industry Peak Body** It was noted by some interviewees that peak industry bodies could play a key role in the following ways 1. collate a list of businesses interested in seasonal workers, harvest trail; and staff exchanges or hosting a staff exchange 2. build a profile for seasonal work opportunities in existing harvest

	• accommodation, if available • staff induction & supervision • administration of exchange agreement	or back packer networks 3. host an exchange network website 4. consideration of a not for profit fee (i.e. $50 year) to enable an exchange service as long as the value proposition was clear
Flexibility	The program should provide for the following exchanges • Staff – business to business. Either cross- regional, sectoral or jurisdictional. • Frontline manager exchanges • Researcher to Business • Business Staff to research Institute/Unit • New graduate to business • Study tours	
Duration	3 days to 12 months	
Application process	Maximum 1hr completion time	
Reporting process	Post exchange evaluation – online survey Maximum 30 min completion time	
Value of the grant	• To cover travel and accommodation costs. This needs to be weighted for travel from remote location. • Any additional workers compensation fees.	Refer to Australian tax office guidelines.
What safe guards and conditions would need to be in place?	Legal and administrative barriers • Exchange agreement that covers duty of care, insurance and the knowledge/skills wanted to be developed. • Ensure worker compensation covers off site work and travel. • Skills or knowledge verification: eg. The completion of staff member's skills passport. • Encourage two way exchanges between businesses. • Require a feedback system for the hosts to ensure that problem employees are not exchanged. • Need to provide guidelines to host and staff on how to get the most of the exchange. • Workers and employers for each exchange need to be very clear about the working environment/conditions they are going to, and the conditions of engagement.	
Other assistance	Provision of model exchange agreement template. Industry Association	

	Industry associations reducing the transactional cost of implementing an exchange, by proving the following: • coordinating role in identifying host businesses • promoting mobility programs • collation of information on current exchange programs • promoting fishing and aquaculture harvest trail to seasonal workers and backpacker networks • arranging skills passports for the seafood industry	
General suggestions/exchange program design attributes	Clear links with job placement agencies will be efficient. Use push and pull strategies to communicate with employers and job seekers about skills needs and job vacancies/exchange opportunities.	
General Labour Force Issues and Observations	• Port Lincoln skills expo – a range of services in place by larger job placement agencies to connect employers with prospects as well as do the preparatory work to determine suitability, including drug and alcohol testing, referee reports. • Employers log into a website specify the skills, experience, qualifications required and search a database that matches their requirements. • Backpackers are a key asset. More worldly, more experienced and want to work. At the end of one processing season 80% of the employers preferred return workers were backpackers. • Some university students get a bit of a shock at the nature and intensity of the work when they work on aquaculture farms.	